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UK METEOROLOGICAL OFFICE
GLOBAL DATA MONITORING REPORT

September 2000

Data Assimilation
Meteorological Office
London Rd
Bracknell
Berkshire
RG12 2SZ

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1. Introduction

As the WMO-appointed lead centre for monitoring surface marine data, the U.K. Meteorological Office produces monthly statistics on the quality of these observations received at RSMC Bracknell. This report includes this information along with statistics for most other types of data. The figures and tables contained herein are presented according to the agreed standards for the exchange of monitoring results.

The report is based on data received at the UK Meteorological Office Headquarters, Bracknell in time for inclusion into the appropriate analysis (the current cut-off time is approximately 7.2 hours after each analysis time). The evaluation of data quality is based on comparison with the appropriate 6-hour global model forecast (background field). Generally, the background field is of high quality except in data sparse areas, tropical regions and areas close to steep orography where care should be taken in interpreting the statistics shown.

Comments or queries on the report are welcome and should be addressed to:-

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2 Global Data Monitoring Statistics

Ships, Fixed buoys, Platforms and Drifting buoys observations

TABLES 1-2 contain lists of the stations which are considered to have returned suspect observations of pressure, windspeed, wind direction or temperature, as appropriate, during the month. The criteria for quality control are given on the header page for each table.

Figures 1 and 2 show 10 degree lat/long box average numbers of SHIP/SYNOP and DRIFTER observations received per day throughout the month at Bracknell and assimilated into model runs. Only data from the main hours of 00 UTC, 06 UTC, 12UTC and 18 UTC are included. Box average values are plotted as the nearest whole number (values of x.5 are rounded up). Where the average is more than 999, then 999 is plotted. A box with no observations is blank. If the 24 hour average >0 but <0.5, then 0 is plotted.

Synop Observations

Table 3 contains a list of stations which are considered to have returned suspect observations of Pressure during the month. The criteria for quality control are given in the header page. The reporting practice of each station is included in the list of statistics.

At the UK Met. Office, we monitor SYNOP pressure after it has been interpolated to our Global NWP Model's surface height. For most synoptic stations (about 75%), the surface pressure (at the model surface) is calculated from the reported station-level pressure, or, if this is not available, the height of a standard pressure-level (e.g. 850 hPa or 700 hPa). If neither of these are available, or if the reported station-level pressure is deemed unreliable, the reported mean sea-level pressure is used (about 25% of SYNOPs).

Aircraft observations

Tables 4A (300-150 hPa) and 4B (1000-301 hPa) contain lists of statistics calculated from data received from all airline carriers.

Figures 3A (300-150 hPa) and 3B (1000-301 hPa) show 10 degree lat/long box average numbers of aircraft reports in AIREP/AMDAR code (including AIREP, ACAR, AMDAR, ASDAR and ADS) received per day throughout the month at Bracknell and assimilated into model runs. Observations with a vector wind difference (compared with the model background field) of >60 m s^{-1} have been excluded. Box average values are plotted as the nearest whole number (values of x.5 are rounded up). Where the average is more than 999, then 999 is plotted. A box with no observations is blank. If the 24 hour average >0 but <0.5, then 0 is plotted.

Figures 4A-7A (300-150 hPa) and 4B-7B (1000-301 hPa) show wind statistics for AIREP/ASDAR in AIREP/AMDAR code (including AIREP, ACAR, AMDAR, ASDAR and ADS). Observations with a vector wind difference > 60 m s^{-1} have been excluded. Statistics have not been calculated for 10 degree lat/long boxes containing <31 observations.

Figure	Parameter
4	Mean wind vectors
5	Mean observation - background wind vector
6	Mean observation-background speed (m s^{-1})
7	RMS observation-background vector (m s^{-1})

Radiosonde Observations

TABLES 5-7 contain lists of the stations which are considered to have returned suspect observations of geopotential height, vector wind or wind direction, as appropriate, during the month. The criteria for quality control are given on the header page for each table.

Figures 8 and 9 show 10 degree lat/long box average numbers of TEMP 500 hPa GEOPOTENTIAL HEIGHT and TEMP/PILOT 300 hPa WIND observations received per day throughout the month at Bracknell and assimilated into model runs. Data from all hours are included. Box average values are plotted as the nearest whole number (values of x.5 are rounded up). Where the average is more than 999, then 999 is plotted. A box with no observations is blank. If the 24 hour average >0 but <0.5, then 0 is plotted.

APPENDIX I shows details of the gross error limits used in TABLES 5 and 6 and the weights used in the RMS values in TABLE 5.

Satellite Observations

Figures 10-24 show satellite wind statistics for all geostationary satellites. All plots other than **AVAILABILITY** show average data where there are > 10 observations in a 10 degree lat/long box.

Figure	Parameter Plotted	Layer (hPa)
10	Availability/average daily number	701-1000
11	Vector mean wind (observed)	701-1000
12	Observation-background vector wind difference	701-1000
13	Mean observation-background speed differences	701-1000
14	RMS observation-background vector difference	701-1000
15	Availability/average daily number	401-700
16	Vector mean wind (observed)	401-700
17	Observation-background vector wind difference	401-700
18	Mean observation-background speed differences	401-700
19	RMS observation-background vector difference	401-700
20	Availability/average daily number	101-400
21	Vector mean wind (observed)	101-400
22	Observation-background vector wind difference	101-400
23	Mean observation-background speed differences	101-400
24	RMS observation-background vector difference	101-400

Figures 25-39 show sounding statistics from the polar orbitting satellite NOAA-15. Figure 25 shows the mean daily number of ATOVS soundings, and figures 26-39 show mean and standard deviation observation-background differences for brightness temperature, for selected channels.
N.B. The sounding data is bias-corrected (and thinned) before being assimilated in the UKMO NWP model.

Figure		Weighting function peak (hPa)
26	Mean	Surface (HIRS8)
27	SD	Surface (HIRS8)
28	Mean	700 (HIRS15)
29	SD	700 (HIRS15)
30	Mean	500-700 (HIRS11)
31	SD	500-700 (HIRS11)
32	Mean	400 (HIRS4)
33	SD	400 (HIRS4)
34	Mean	700 (AMSUA5)
35	SD	700 (AMSUA5)
36	Mean	300 (AMSUA7)
37	SD	300 (AMSUA7)
38	Mean	100 (AMSUA9)
39	RMS	100 (AMSUA9)

3 Composite Observing Systems for the North Atlantic (COSNA)

This section shows statistics for upper air (radiosonde and aircraft) and surface (drifter) data for the North Atlantic area for data received at Bracknell during the month.

TABLE 8 shows quality statistics for **Mean Sea-level Pressure, Windspeed and Wind Direction** received at Bracknell in DRIFTER code during the month for the area 10°N - 80°N, 85°W - 0°W.

TABLE 9 shows quality statistics for **Temperature and Vector Wind** received at Bracknell from aircraft during the month for the area 40°N - 70°N, 60°W - 0°W.

Table 10 - 13 show quality statistics **(Geopotential Height and Windspeed at 100 and 500 hPa)** for all TEMPSHIPS in the area bounded by 0°N - 90°N, 100°W - 40°E and selected TEMP stations within the same area.

Revisions

1. May 95 Monitoring statistics for NOAA-11 removed. Figures 25-27 now show data for NOAA-12
2. May 95 Notes giving details of observations included in wind direction statistics clarified and corrected.
3. August 95 Monitoring statistics for NOAA-14 added with figures 28-30.
4. February 96 Monitoring statistics for GOES-7 have been replaced by statistics for GOES-8 and GOES-9.
5. April 96. 500 km and 120 km SATEMs replaced by 120 km resolution temperature profiles produced locally from the radiances disseminated by NESDIS.
6. February 97 Monitoring statistics for Meteosat 5 have been replaced by statistics for Meteosat 6.
7. Sept 97 Monitoring statistics for NOAA-12 removed. Figures 25-27 now show data for NOAA-11
8. January 1998. Increase in resolution of UKMO global forecast model.
9. April 1998. GOES winds ceased on 2nd March 1998, and were replaced with GOES high resolution winds from 15th.
10. June 1998. Monitoring statistics for Meteosat-6 were replaced by monitoring statistics for Meteosat-7, from 3rd June.
11. June 1998. Corrections in our processing of radiosonde data resulted in a decrease in the number of 500hPa geopotential heights in Figure 8 of about 230 per 24 hours (compared with previous reports), and a small increase in the number of 300hPa winds in Figure 9.
12. July 1998. Meteosat-5 began transmitting winds from 2nd July, at 63 degrees East (over the Indian ocean), and this data is included in the statistics.
13. July 1998. GOES-9 (at 135W) was replaced mid-month by GOES-10 (initially at 105W, moving towards 135W).
14. February 1999. Problems with NOAA-11, and TOVS data ceased to be assimilated from 26 February.
15. March 1999. UKMO introduced 3-D VAR assimilation system on 29 March, and also began assimilating ATOVS data from NOAA-15.
16. May 1999. Included statistics for ATOVS sounding data from NOAA-15.
17. September 1999. Included statistics for high resolution visible winds from Meteosat-5 and Meteosat-7.
18. October 1999. The 3-D VAR assimilation system was upgraded on 19 October, including improvements in the assimilation of ATOVS radiances, use of SSM/I surface wind speed, an improvement in the calculation of surface pressure for SYNOPs, and thinning and revision of observation errors of aircraft data.
19. November 1999. High resolution visible winds from Meteosat-5 and Meteosat-7 removed until used operationally.
20. April 2000. Aireps in Table 4 and Figures 3-7 split into ranges 300-150 hPa (A) and 1000-301 hPa (B).
21. September 2000. Corrected an error affecting the mean positions of a minority of buoys in Table 2.

TABLE 1

MONITORING OF MARINE SURFACE OBSERVATIONS
MONTHLY SUSPECT LIST - SHIPS, FIXED BUOYS AND PLATFORMS
MONITORING CENTRE: BRACKNELL
MONTH: September 2000

Monitoring procedures

Period :One calendar month.

Data monitored :Reports from each unique identifier for ships, fixed buoys and platforms.

Standard of comparison :Background field from UKMO global model.

Observation times :00, 06, 12, 18 UTC

Elements monitored
:Mean sea level pressure (hPa).
:Wind speed ($m\ s^{-1}$).
:Wind direction (Degrees).

Parameters monitored

:NOBS :Number of observations received excluding duplicates.

:NGE :Number of observations with gross errors.

:PGE :Percentage of observations with gross errors.

:SD :SD of difference of observations from background values excluding those with gross errors.

:BIAS :Mean difference of observations from background values excluding those with gross errors.
N.B. a positive bias indicates the observation is veered to the background.

:RMS :Root Mean Square difference of observations from background values excluding those with gross errors.

GROSS ERROR LIMIT
:15 hPa (pressure)
:25 $m\ s^{-1}$ (vector wind)

SELECTION CRITERIA :NOBS ≥ 20, and one or more of the following:

1.|bias|	$\geq$ 4 hPa	(pressure),
	$\geq$ 5 $m\ s^{-1}$	(wind speed),
	$\geq$ 30 degrees	(direction).
2.SD	$\geq$ 6 hPa	(pressure),
	$\geq$ 80 degrees	(direction).
3.PGE	$\geq$ 25	

N.B. Observations of wind direction are only included in the wind direction statistics if the observed OR background wind speed > 5 $m\ s^{-1}$

IDENTIFIER	HOUR	ELEM	LEVEL	NOBS	NGE	PGE	SD	BIAS	RMS
MEAN SEA LEVEL PRESSURE									
CGDS	ALL	P	SUR	129	65	50	2.2	-0.2	2.2
CGDX	ALL	P	SUR	46	17	37	0.7	0.2	0.7
C6FD9	ALL	P	SUR	32	0	0	1.0	4.6	4.7
DGAF	ALL	P	SUR	35	0	0	1.6	-4.9	5.2
DHBN	ALL	P	SUR	38	1	3	6.2	-3.5	7.1
DVRVW6D	ALL	P	SUR	62	0	0	1.4	6.7	6.8
ELTQ6	ALL	P	SUR	23	6	26	4.2	9.9	10.8
ELVJ9	ALL	P	SUR	42	0	0	2.9	-5.3	6.0
ELVY8	ALL	P	SUR	24	0	0	1.5	-4.8	5.1
LAFQ5	ALL	P	SUR	37	0	0	1.1	-6.6	6.7
MXAR9	ALL	P	SUR	35	0	0	1.5	4.2	4.5
PCAG	ALL	P	SUR	76	1	1	1.1	-4.0	4.2
PDAH	ALL	P	SUR	61	1	2	1.2	-6.5	6.6
PFEZ	ALL	P	SUR	23	10	43	6.0	-7.5	9.6
SKPE	ALL	P	SUR	26	1	4	6.4	-0.6	6.4
UAIS	ALL	P	SUR	48	0	0	2.4	-5.7	6.2
UBCB	ALL	P	SUR	32	0	0	2.0	7.1	7.4
UBDN	ALL	P	SUR	23	0	0	1.3	5.5	5.6
UCAD	ALL	P	SUR	38	0	0	1.1	-7.7	7.8
UGGA	ALL	P	SUR	28	0	0	2.5	-4.4	5.1
UICO	ALL	P	SUR	93	7	8	5.9	4.2	7.2
UICP	ALL	P	SUR	22	7	32	4.2	-8.5	9.5
UIDS	ALL	P	SUR	33	0	0	1.0	-4.2	4.3
VCRT	ALL	P	SUR	42	0	0	2.0	-5.5	5.8
VGJC	ALL	P	SUR	30	20	67	4.1	-6.3	7.6
WDZG	ALL	P	SUR	28	0	0	1.7	-5.3	5.5
WTDF	ALL	P	SUR	61	0	0	0.7	-4.0	4.1
62117	ALL	P	SUR	74	0	0	1.4	4.4	4.6
8PNI	ALL	P	SUR	23	0	0	0.8	-4.8	4.9
8PPF	ALL	P	SUR	32	0	0	1.7	-4.1	4.4
9MBX5	ALL	P	SUR	27	0	0	1.2	8.3	8.4
9VRA	ALL	P	SUR	65	0	0	1.0	-4.8	4.9
WIND SPEED									
C6NI3	ALL	SPEED	SUR	26	0	0	3.6	6.6	7.5
DGGE	ALL	SPEED	SUR	24	0	0	5.0	5.0	7.1
ELNJ3	ALL	SPEED	SUR	24	0	0	2.9	5.3	6.0
ELRJ3	ALL	SPEED	SUR	50	0	0	4.4	6.5	7.8
ELXS5	ALL	SPEED	SUR	44	2	5	7.1	9.2	11.6
GFWX	ALL	SPEED	SUR	44	0	0	3.5	5.7	6.7
MQPU6	ALL	SPEED	SUR	40	1	2	5.3	8.3	9.9
MWPM2	ALL	SPEED	SUR	31	0	0	7.5	7.8	10.8
PPSO	ALL	SPEED	SUR	40	0	0	4.9	6.2	7.9
VCRT	ALL	SPEED	SUR	40	0	0	3.0	5.1	5.9
VLST	ALL	SPEED	SUR	201	0	0	3.3	5.2	6.2
VRUH8	ALL	SPEED	SUR	59	0	0	8.1	5.6	9.9
ZCBH3	ALL	SPEED	SUR	43	0	0	6.3	6.2	8.8
62108	ALL	SPEED	SUR	599	0	0	2.5	-5.0	5.6
WIND DIRECTION									
C6LV3	ALL	DIRN.	SUR	23	0	0	47.6	-30.0	56.3
DNBJ	ALL	DIRN.	SUR	22	0	0	30.1	34.4	45.7

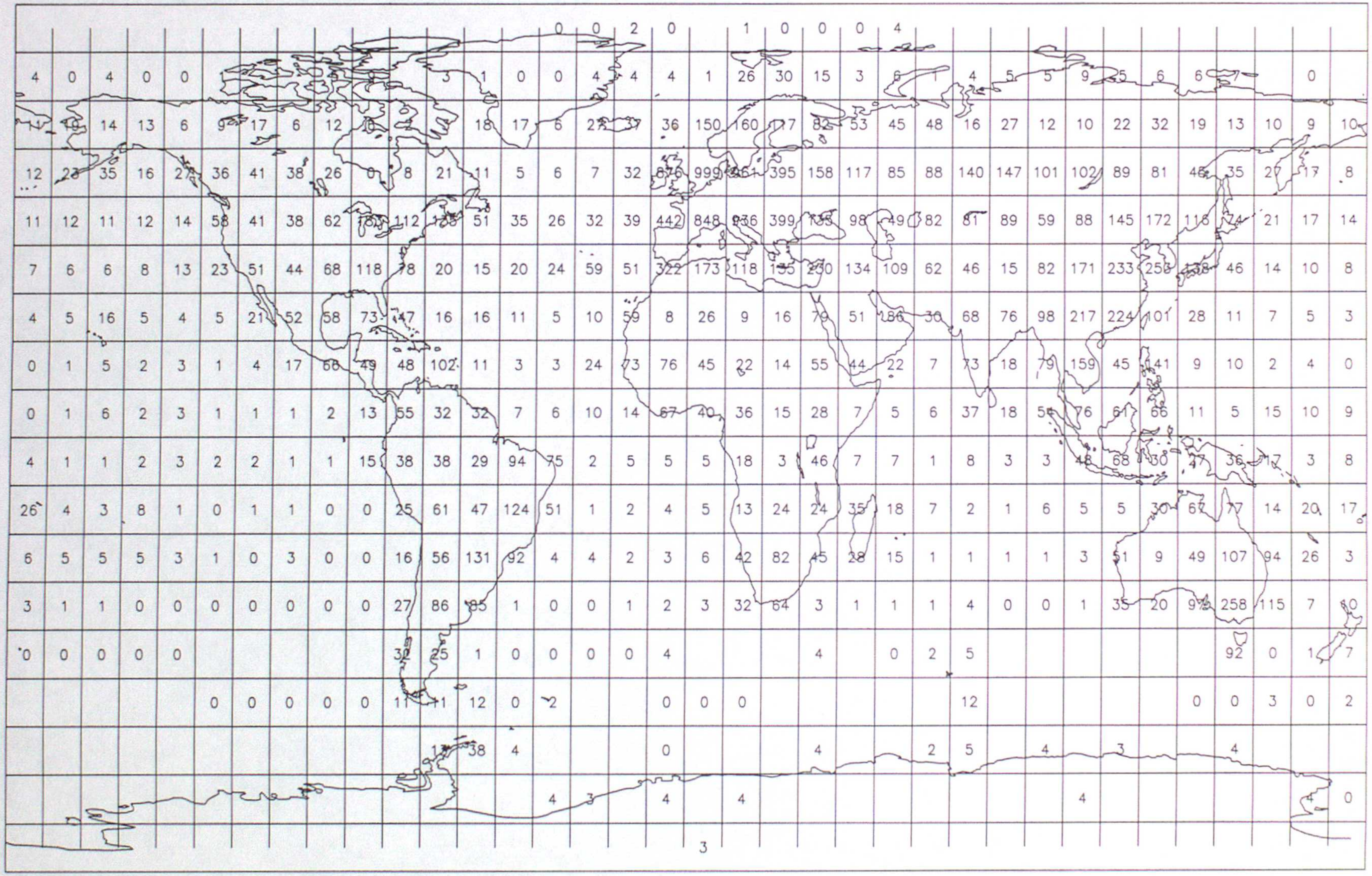
AVAILABILITY – SHIP/SYNOP – SEPTEMBER 2000

FIGURE 1

MAIN HOURS ONLY

10 DEGREE BOX AVERAGE NUMBER OF OBSERVATIONS IN 24 HOURS

GLOBAL AVERAGE NUMBER OF OBSERVATIONS IN 24 HOURS = 21130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12 23 35 16 27 36 41 38 26 0 8 21 11 5 6 7 32 876 999 861 395 158 117 85 88 140 147 101 102 89 81 46 35 27 17 8
11 12 11 12 14 58 41 38 62 183 112 135 51 35 26 32 39 442 848 936 399 135 98 49 82 81 89 59 88 145 172 118 74 21 17 14
7 6 6 8 13 23 51 44 68 118 78 20 15 20 24 59 51 322 173 118 155 230 134 109 62 46 15 82 171 233 256 138 46 14 10 8
4 5 16 5 4 5 21 52 58 73 47 16 16 11 5 10 59 8 26 9 16 79 51 186 30 68 76 98 217 224 101 28 11 7 5 3
0 1 5 2 3 1 4 17 66 49 48 102 11 3 3 24 73 76 45 22 14 55 44 22 7 73 18 79 159 45 141 9 10 2 4 0
0 1 6 2 3 1 1 1 2 13 55 32 32 7 6 10 14 67 40 36 15 28 7 5 6 37 18 54 76 61 66 11 5 15 10 9
4 1 1 2 3 2 2 1 1 15 38 38 29 94 75 2 5 5 5 18 3 46 7 7 1 8 3 3 48 68 30 47 36 17 3 8
26 4 3 8 1 0 1 1 0 0 25 61 47 124 51 1 2 4 5 13 24 24 35 18 7 2 1 6 5 5 30 67 77 14 20 17
6 5 5 5 3 1 0 3 0 0 16 56 131 92 4 4 2 3 6 42 82 45 28 15 1 1 1 1 3 51 9 49 107 94 26 3
3 1 1 0 0 0 0 0 0 0 27 86 85 1 0 0 1 2 3 32 64 3 1 1 1 4 0 0 1 35 20 97 258 115 7 10
0 0 0 0 0 32 25 1 0 0 0 0 4 4 0 2 5 92 0 1 7
0 0 0 0 0 11 11 12 0 2 0 0 0 12 0 0 3 0 2
17 38 4 0 4 2 5 4 3 4
4 3 4 4 4 4 0
3

TABLE 2

MONITORING OF MARINE SURFACE OBSERVATIONS
MONTHLY SUSPECT LIST - DRIFTING BUOYS
MONITORING CENTRE: BRACKNELL
MONTH: September 2000

Monitoring procedures

Period		:One calendar month.	
Data monitored		:Reports from each unique identifier for drifting buoys.	
Standard of comparison		:Background field from UKMO global model.	
Position		:Average latitude and longitude for period.	
Observation times		:00, 06, 12, 18 UTC	
Elements monitored		:Mean sea level pressure (hPa). :Wind speed (m s^{-1}). :Wind direction (degrees).	
Parameters monitored	:NOBS	:Number of observations received excluding duplicates.	
	:NGE	:Number of observations with gross errors.	
	:PGE	:Percentage of observations with gross errors.	
	:SD	:SD of difference of observations from background values excluding those with gross errors.	
	:BIAS	:Mean difference of observations from background values excluding those with gross errors. **N.B. a positive bias indicates the observation is veered to the background.**	
	:RMS	:Root Mean Square difference of observations from background values excluding those with gross errors.	
GROSS ERROR LIMIT	:15 hPa :25 m s^{-1}	(pressure) (vector wind)	
SELECTION CRITERIA :	NOBS	≥ 20 , and one or more of the following:	
	1.|bias|	≥ 4 hPa ≥ 5 m s^{-1} ≥ 30 degrees	(pressure), (wind speed), (direction).
	2.SD	≥ 6 hPa ≥ 80 degrees	(pressure), (direction).
	3.PGE	≥ 25.	

N.B. Observations of wind direction are only included in the wind direction statistics if the observed OR background wind speed > 5 m s^{-1}

IDENTIFIER	LAT.	LONG.	HOUR	ELEM	LEVEL	NOBS	NGE	PGE	SD	BIAS	RMS
MEAN SEA LEVEL PRESSURE											
14913	-40.0	69.3	ALL	P	SUR	60	27	45	3.7	0.7	3.8
17539	-27.3	-8.2	ALL	P	SUR	117	47	40	2.6	-0.7	2.7
17546	-36.1	69.4	ALL	P	SUR	314	0	0	1.7	-4.0	4.4
17642	-39.0	0.1	ALL	P	SUR	33	0	0	0.7	4.2	4.2
21909	39.9	137.0	ALL	P	SUR	163	16	10	6.3	-2.4	6.8
41630	20.2	-61.2	ALL	P	SUR	140	109	78	0.4	0.2	0.4
46561	32.2	-170.9	ALL	P	SUR	195	0	0	0.8	-4.9	4.9
46903	30.6	-155.4	ALL	P	SUR	27	18	67	1.3	-13.4	13.5
62597	48.4	-4.5	ALL	P	SUR	141	0	0	0.4	-6.4	6.4
WIND SPEED											
17557	-40.0	66.1	ALL	SPEED	SUR	637	1	0	4.3	-7.3	8.5
41613	12.4	-35.3	ALL	SPEED	SUR	465	64	14	7.1	5.8	9.2
WIND DIRECTION											
44772	48.9	-37.3	ALL	DIRN.	SUR	247	7	3	69.6	66.0	95.9

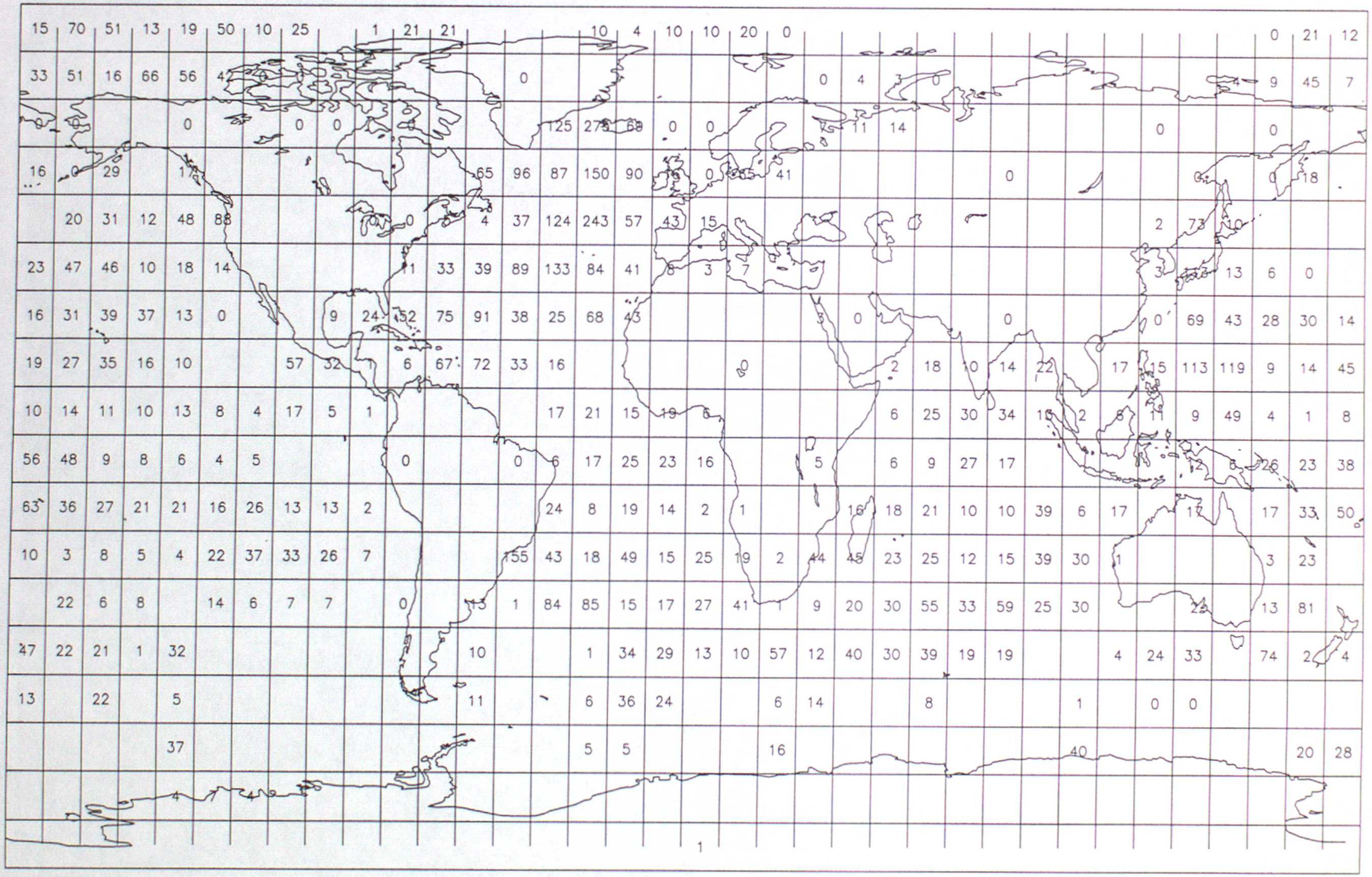
AVAILABILITY – DRIFTER – SEPTEMBER 2000

MAIN HOURS ONLY

10 DEGREE BOX AVERAGE NUMBER OF OBSERVATIONS IN 24 HOURS

GLOBAL AVERAGE NUMBER OF OBSERVATIONS IN 24 HOURS = 8663

FIGURE 2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20 31 12 48 88 0 4 37 124 243 57 43 15 2 73 10
23 47 46 10 18 14 11 33 39 89 133 84 41 8 3 7 3 3 13 6 0
16 31 39 37 13 0 9 24 152 75 91 38 25 68 43 3 0 0 0 69 43 28 30 14
19 27 35 16 10 57 32 1 6 67 72 33 16 0 2 18 10 14 22 17 15 113 119 9 14 45
10 14 11 10 13 8 4 17 5 1 17 21 15 19 6 6 25 30 34 16 2 8 11 9 49 4 1 8
56 48 9 8 6 4 5 0 0 6 17 25 23 16 5 6 9 27 17 12 8 26 23 38
63 36 27 21 21 16 26 13 13 2 24 8 19 14 2 1 16 18 21 10 10 39 6 17 17 17 33 50
10 3 8 5 4 22 37 33 26 7 155 43 18 49 15 25 19 2 44 45 23 25 12 15 39 30 1 3 23
22 6 8 14 6 7 7 0 13 1 84 85 15 17 27 41 1 9 20 30 55 33 59 25 30 23 13 81
47 22 21 1 32 10 1 34 29 13 10 57 12 40 30 39 19 19 4 24 33 74 2 4
13 22 5 11 6 36 24 6 14 8 1 0 0
37 5 5 16 40 20 28
4 4
1

TABLE 3

MONITORING OF LAND SURFACE OBSERVATIONS
MONTHLY SUSPECT LIST - SYNOPS & AUTOSYNOPS
MONITORING CENTRE: BRACKNELL
MONTH: September 2000

Monitoring procedures

Period		:One calendar month.
Data monitored		:Reports from each unique identifier for synops & autosynops.
Standard of comparison		:Background field from UKMO global model.
Observation times		:00, 06, 12, 18 UTC
Elements monitored		:Surface pressure (hPa).
Parameters monitored	:HT(m)	:Station height (in metres) as given in WMO No. 9 Vol A
	:RP	:Pressure reporting practice M=mean sea level pressure (hPa) reported. S=Station level pressure reported. 8=Geopotential height (m) of 850 hPa surface reported. 7=Geopotential height (m) of 700 hPa surface reported.
	:NOBS	:Number of observations received excluding duplicates.
	:NGE	:Number of observations with gross errors.
	:PGE	:Percentage of observations with gross errors.
	:%REJ	:Percentage of observations flagged excluding those with gross errors.
	:SD	:SD of difference of observations from background values excluding those with gross errors.
	:BIAS	:Mean difference of observations from background values excluding those with gross errors.
	:RMS	:Root Mean Square difference of observations from background values excluding those with gross errors.

GROSS ERROR LIMIT	:15 hPa	(pressure)
SELECTION CRITERIA	:NOBS	≥ 20 ,and one or more of the following:
	1.|bias|	≥ 4 hPa
	2. SD	≥ 6 hPa
	3.PGE	≥ 25.

N.B. For stn ht ≥ 500m, mslp is that calculated from station level pressure where available.
For stn ht < 500m, mslp is that as reported by the station where available.

WMO REGION 1:

STATION	LAT	LONG	HT(M)	RP	NOBS	NGE	PGE	%REJ	SD	BIAS	RMS
60511	35.3N	1.4E	1127	S8	112	30	27	0	5.6	2.1	6.0
62056	32.8N	21.8E	625	S8	83	1	1	47	1.2	-5.5	5.6
63602	3.1N	30.9E	1204	S	29	29	100	0			
63801	4.9S	29.6E	882	S8	30	1	3	70	4.1	6.8	7.9
68030	18.5S	25.6E	1071	8	47	0	0	0	0.9	5.2	5.3
68038	20.5S	26.0E	903	8	43	0	0	0	1.1	4.4	4.5
68106	23.6S	15.1E	407	S8	71	34	48	0	1.7	-0.2	1.7
68338	26.9S	24.6E	1234	S8	54	53	98	4	0.0	1.3	1.3
68396	26.5S	31.3E	641	S8	42	0	0	0	1.1	4.3	4.4

WMO REGION 2:

STATION	LAT	LONG	HT(M)	RP	NOBS	NGE	PGE	%REJ	SD	BIAS	RMS
30320	56.9N	105.7E	669	MS	114	58	51	0	1.4	1.1	1.8
30554	54.5N	113.6E	995	MS	118	0	0	50	5.0	4.9	7.0
30967	49.9N	115.8E	623	MS	83	0	0	0	1.6	-4.7	5.0
40726	36.8N	45.7E	1384	MS	91	0	0	0	0.9	4.1	4.2
40741	36.6N	61.2E	235	MS	91	0	0	2	1.6	-4.3	4.6
41254	23.1N	57.7E	1755	S8	68	68	100	0			
41396	16.0N	48.9E	700	MS	57	1	2	4	1.4	6.3	6.5
41466	13.7N	44.1E	1402	8	47	0	0	0	0.5	-6.2	6.2
41696	29.0N	66.6E	2015	S	29	17	59	0	0.4	-0.9	1.0
44416	28.6N	81.6E	720	MS	31	0	0	0	1.3	4.8	5.0
47022	40.8N	128.2E	1200	S	29	0	0	0	1.1	4.4	4.5
51495	43.5N	91.6E	874	M	117	0	0	0	1.3	7.3	7.4
52602	38.8N	93.4E	2734	S	117	0	0	0	1.0	-5.4	5.5
52955	35.6N	100.8E	3201	S	117	0	0	0	0.9	12.6	12.6
54587	39.1N	123.2E	141	M	113	0	0	0	0.7	-4.2	4.3
56146	31.6N	100.0E	339	S	117	117	100	0			
56444	28.5N	98.9E	3488	S	117	4	3	0	0.7	13.3	13.3
56462	29.0N	101.5E	2994	S	117	0	0	1	1.3	8.8	8.9

WMO REGION 3:

STATION	LAT	LONG	HT(M)	RP	NOBS	NGE	PGE	%REJ	SD	BIAS	RMS
80099	7.1N	70.7W	128	MS	33	0	0	0	1.2	-6.4	6.5
82326	3.8S	62.1W	48	MS	86	0	0	0	1.4	4.5	4.7
83235	12.4S	46.4W	604	MS	84	2	2	2	1.3	6.5	6.6
83319	14.7S	52.4W	315	MS	78	0	0	0	1.5	4.0	4.3
83332	14.1S	46.4W	826	MS	85	9	11	0	1.0	13.2	13.2
83361	15.6S	56.1W	151	MS	80	0	0	4	2.1	4.3	4.8
83408	14.3S	43.8W	447	MS	81	0	0	0	0.9	11.3	11.3
83488	17.8S	42.9W	1097	MS	86	86	100	0			
83531	18.6S	46.5W	940	MS	85	1	1	0	1.1	-6.7	6.8
83587	19.9S	43.9W	850	MS	85	0	0	0	0.9	-7.0	7.1
83773	23.1S	48.9W	793	MS	84	0	0	1	1.5	-10.5	10.6
83836	25.5S	50.6W	837	MS	84	1	1	0	0.9	-5.4	5.5
83953	30.9S	55.5W	231	MS	85	2	2	4	2.5	-11.4	11.7
84377	3.8S	73.3W	125	M	94	0	0	0	1.4	4.9	5.1
84401	5.2S	80.6W	49	MS	97	0	0	1	1.3	4.4	4.6
84425	5.9S	76.1W	179	MS	68	0	0	0	1.3	4.6	4.8
84455	6.5S	76.4W	281	MS	69	0	0	0	1.3	5.2	5.4
84472	7.1S	78.5W	2620	S	41	0	0	0	0.8	-6.4	6.4
84474	7.2S	76.7W	350	S	69	1	1	0	1.3	9.7	9.8
84686	13.6S	72.0W	3248	S	96	0	0	0	1.1	-5.9	6.0
84688	13.7S	73.4W	3444	S	39	10	26	0	0.6	-13.9	13.9
84720	14.9S	75.0W	567	MS	44	0	0	0	1.0	4.6	4.7
84782	18.1S	70.3W	468	MS	71	0	0	0	1.5	8.7	8.8
85140	14.3S	67.4W	140	MS	57	1	2	11	2.1	4.3	4.8
85141	14.5S	67.6W	204	MS	57	0	0	0	1.5	4.9	5.1

WMO REGION 3:

STATION	LAT	LONG	HT(M)	RP	NOBS	NGE	PGE	%REJ	SD	BIAS	RMS
85264	18.5S	64.1W	1998	S	54	54	100	0			
85312	19.8S	63.9W	992	S	43	0	0	0	1.5	-9.5	9.6
85406	18.3S	70.3W	55	M	117	0	0	0	1.3	5.6	5.7
85432	22.5S	68.9W	2320	S8	82	0	0	2	1.4	5.0	5.2

WMO REGION 4:

STATION	LAT	LONG	HT(M)	RP	NOBS	NGE	PGE	%REJ	SD	BIAS	RMS
70194	66.6N	145.3W	431	S	97	97	100	0			
71583	68.3N	122.1W	530	MS	115	0	0	3	0.8	-4.0	4.1
72327	36.1N	86.7W	182	MS	117	0	0	3	0.7	4.2	4.3
72376	35.2N	111.8W	2192	M	115	0	0	3	2.4	4.9	5.5
76118	30.4N	109.7W	1040	MS	40	0	0	3	1.6	-9.2	9.3
76658	19.2N	103.7W	494	MS	26	0	0	0	1.0	7.0	7.1
76743	18.0N	92.9W	10	MS	85	0	0	14	2.0	4.8	5.2
76773	17.8N	97.8W	1650	MS	35	0	0	0	0.8	4.5	4.6
76840	16.2N	93.9W	64	MS	70	0	0	11	1.0	5.0	5.1
76903	14.9N	92.3W	118	MS	99	0	0	45	1.6	5.6	5.8

WMO REGION 5:

STATION	LAT	LONG	HT(M)	RP	NOBS	NGE	PGE	%REJ	SD	BIAS	RMS
92010	6.1S	145.4E	1587	M	50	0	0	0	0.7	9.8	9.8
92068	10.0S	149.4E	1005	MS	49	1	2	4	1.8	-4.2	4.6
94130	14.8S	131.9E	120	MS	87	0	0	100	1.0	5.5	5.6
94868	37.8S	145.0E	35	MS	116	0	0	0	0.7	10.3	10.3
96505	3.7N	115.7E	913	S8	22	21	95	0	0.0	1.4	1.4
97378	10.7S	123.1E	1	MS	57	55	96	0	4.1	-10.6	11.4

WMO REGION 6:

STATION	LAT	LONG	HT(M)	RP	NOBS	NGE	PGE	%REJ	SD	BIAS	RMS
01245	62.8N	9.7E	671	MS	85	0	0	2	1.1	7.6	7.7
04203	76.6N	73.0W	11	MS	89	26	29	36	4.1	1.4	4.3
04214	70.7N	54.6W	27	MS	111	2	2	63	4.4	-6.1	7.5
04416	72.6N	38.4W	3202	S	103	5	5	0	0.9	-4.8	4.9
06605	47.1N	7.1E	1599	S8	118	0	0	80	0.9	-4.0	4.1
06685	47.0N	9.1E	515	MS	118	0	0	59	1.5	5.0	5.2
10557	50.5N	11.1E	845	S8	352	352	100	0			
12140	54.4N	18.7E	2	MS	115	0	0	1	0.9	7.7	7.8
13269	44.3N	19.9E	176	MS	118	1	1	2	0.9	7.6	7.7
13593	41.3N	22.4E	1031	8	57	0	0	47	2.0	-4.1	4.6
14554	44.9N	18.4E	140	S	54	1	2	0	0.8	-13.1	13.1
14650	43.8N	18.0E	972	S	57	56	98	0	0.0	-10.3	10.3
17092	39.8N	39.5E	1218	S8	117	0	0	0	1.5	6.7	6.9

ANTARCTIC:

STATION	LAT	LONG	HT(M)	RP	NOBS	NGE	PGE	%REJ	SD	BIAS	RMS
89108	89.0S	1.0W	2755	S	58	0	0	0	0.9	4.1	4.2
89208	90.0S	0.0W	2835	M	23	12	52	0	0.6	1.2	1.3
89257	75.4S	59.9W	40	S	408	4	1	0	2.3	-4.4	5.0
89264	71.4S	68.9W	780	S	249	0	0	0	1.8	8.3	8.5
89266	72.2S	60.3W	91	S	237	117	49	0	6.7	-8.9	11.1
89272	75.0S	70.8W	1395	S	236	236	100	0			
89744	74.0S	43.0E	3353	S	277	0	0	0	0.8	7.9	7.9
89769	78.5S	168.4E	50	S	382	382	100	0			
89774	73.4S	76.8E	2563	S	248	0	0	0	1.0	4.2	4.3
89847	67.6S	146.0E	30	S	291	4	1	0	1.8	-9.4	9.6
89866	77.4S	163.8E	120	S	276	0	0	13	2.7	4.8	5.5
89868	79.9S	169.8E	60	S	276	0	0	4	2.2	-4.1	4.7

TABLE 4A

MONTHLY MONITORING OF AIRCRAFT OBSERVATIONS
MONITORING CENTRE: BRACKNELL
MONTH: September 2000

Monitoring procedures

Period :One calendar month.

Data monitored :Statistics for each airline carrier.

Area monitored :90°N - 90°S, 180°W - 180°E.

Standard of comparison :Background field from UKMO global model.

Observation times :All hours combined.

Level(s) monitored :300.0 - 150.0 hPa

Elements monitored :TEMP in °C ; WIND in m s^{-1}

Parameters monitored

:N REP. :Number of observations received excluding duplicates.

:PG :Percentage of observations with gross errors.

:PR :Percentage of observations rejected by quality control including rejections from the duplicate check.

:PC :Percentage of observations with calm winds.

:RMS :Root Mean Square difference of observations from background values excluding those with gross errors in Temperature & vector wind.

:BIAS :Mean difference of observations from background values excluding those with gross errors in Temperature & Wind Speed.

GROSS ERROR LIMITS :10.0 °C ; 60 m s^{-1} Vector Wind

SELECTION CRITERIA :N REP ≥ 20

NB: All American ACARS data are grouped together and statistics are shown at the bottom of the table as "US ACARS". All ADS reports are similarly grouped together.

		TEMPERATURE					WIND				
IDENT.	N.REP.	PG	PR	RMS	BIAS	N.REP.	PG	PR	PC	RMS	BIAS
AAA	28	0	32	2.1	0.5	28	0	32	0	6.5	1.7
AAH	889	0	37	1.3	0.5	877	0	37	0	6.2	1.5
AAL	6535	0	18	1.4	0.2	6493	0	18	0	7.4	1.1
AAR	1947	0	7	1.6	-0.5	1944	0	8	0	7.9	0.7
ABD	21	0	10	1.2	0.2	22	0	9	0	5.1	0.8
ACA	1934	1	3	1.7	0.1	1969	0	3	0	6.7	0.8
ACI	80	0	48	1.0	0.1	80	0	48	0	8.4	1.4
AEA	794	1	6	1.7	0.7	773	0	6	0	8.2	1.0
AEL	500	1	10	1.6	0.1	504	0	11	0	8.2	1.1
AEY	110	2	6	2.7	1.6	110	0	2	0	6.9	1.3
AFL	546	1	4	1.9	0.3	552	0	4	0	7.3	0.6
AFR	1813	0	7	1.6	0.0	1816	0	8	0	7.1	0.8
AIH	259	0	3	1.0	0.0	263	0	4	0	6.5	1.1
AJM	246	0	3	1.3	-0.2	249	0	3	0	6.1	0.6
AMM	57	0	0	1.6	0.7	60	0	5	0	8.8	1.3
AMT	923	1	44	2.8	2.0	920	0	43	0	7.3	1.1
AMX	246	2	4	1.7	0.6	245	0	4	0	9.2	1.4
ANA	998	0	11	1.3	0.6	983	0	11	0	7.1	1.1
ANZ	6462	0	34	1.4	0.1	6452	0	34	0	7.0	0.7
AOM	759	1	9	1.6	0.9	757	0	10	0	7.6	1.0
ARG	95	0	19	2.6	0.7	96	0	49	0	10.8	0.8
AUA	25	0	0	1.8	1.1	25	0	4	0	7.4	1.2
AUT	23	4	17	3.9	-2.3	23	0	0	0	7.8	-0.2
AVA	645	0	3	1.6	0.8	647	0	4	0	7.9	1.1
AVN	142	0	50	0.8	-0.1	142	0	50	0	5.9	-0.2
AXF	63	3	35	1.1	-0.2	64	0	33	0	6.5	0.1
AZA	691	4	12	2.5	0.7	702	0	6	0	8.4	0.2
BAL	255	0	5	1.3	-0.2	249	0	8	0	7.2	0.5
BAW	1610	1	5	1.8	0.5	1616	0	5	0	6.8	1.0
BBB	25	0	4	2.2	-0.9	23	0	0	0	6.3	1.4
BLC	31	0	39	1.9	0.7	33	0	39	0	9.8	-0.4
BLX	38	0	0	1.6	-1.3	38	0	5	0	7.9	1.5
BWA	337	2	4	1.9	1.4	332	0	4	0	6.8	1.5
CAL	299	1	8	1.7	0.4	315	0	7	0	7.0	0.8
CCA	470	1	100	2.3	0.5	497	0	64	0	11.4	0.1
CDN	2545	0	11	1.6	0.1	2484	0	11	0	7.1	0.8
CES	458	0	5	1.4	0.4	474	0	62	0	8.3	0.8
CFC	32	0	9	2.1	1.1	33	0	9	0	7.7	2.7
CFG	910	1	3	1.6	-0.6	905	0	3	0	7.0	1.0
CGB	26	0	4	1.5	0.4	27	0	4	0	10.1	1.1
CLX	402	0	5	1.6	-0.3	409	0	5	0	7.5	1.2
CMI	295	0	5	2.0	0.7	296	0	6	0	10.2	1.5
CMM	648	0	8	1.5	0.1	647	0	9	0	7.0	0.5
COA	1493	1	25	1.3	0.2	1476	0	26	0	8.8	1.6
CPA	79	0	13	2.0	0.5	85	2	18	0	9.2	1.5
CRL	516	1	9	1.7	0.8	519	0	10	0	7.6	1.2
CSN	64	0	8	1.5	0.3	69	0	9	0	8.5	0.3
CTB	235	0	5	1.4	0.4	232	0	3	0	5.9	1.1
CTM	41	2	10	1.0	0.2	40	0	13	0	11.7	2.5
CUB	255	1	7	2.2	1.7	253	0	7	0	8.3	0.9
DAL	3952	0	32	1.4	0.3	3988	0	32	0	6.8	0.7
DBY	582	1	3	1.2	-0.1	585	0	4	0	6.7	0.9
DCS	55	0	0	1.6	0.0	55	0	5	0	9.7	0.3
DLH	2162	1	6	1.7	0.0	2168	0	6	0	6.8	0.5
ECH	44	5	25	3.4	0.0	43	0	19	0	7.5	1.0
EEZ	164	10	100	4.2	2.8	167	0	8	0	9.9	0.5
EIA	307	1	38	1.9	0.1	300	0	38	0	9.9	0.8
EIN	30	3	3	1.7	-0.4	30	0	3	0	9.0	2.8
ELY	122	2	5	1.8	-0.1	122	0	1	0	7.2	0.2

	TEMPERATURE					WIND					
IDENT.	N.REP.	PG	PR	RMS	BIAS	N.REP.	PG	PR	PC	RMS	BIAS
ETH	29	0	14	1.4	-0.5	32	0	16	0	9.5	2.2
EVA	792	1	4	1.5	-0.4	802	0	4	0	7.8	0.5
EWW	104	0	10	1.5	0.0	107	0	10	0	9.7	1.0
FDX	1915	0	16	1.5	0.5	1935	0	17	0	7.7	0.9
FIN	312	0	2	1.4	0.4	305	1	4	0	7.0	0.8
FJI	797	2	48	1.5	0.4	753	1	47	0	7.8	0.6
FOM	609	0	27	1.5	-0.1	609	0	28	0	6.8	0.7
FWQ	135	0	56	1.3	0.1	135	0	56	0	8.7	-0.4
GAF	45	0	9	2.1	-0.4	44	0	7	0	7.6	1.5
GCO	136	1	5	1.5	0.3	147	1	100	0	14.8	3.7
GHA	111	1	5	2.2	-0.7	110	0	3	0	9.2	2.4
GIA	29	0	21	1.2	0.0	28	0	21	0	6.1	2.5
GRL	36	0	0	1.3	-0.1	36	0	0	0	6.1	0.6
GTI	389	1	7	1.8	-0.5	400	1	7	0	8.4	0.5
HAL	4118	0	36	1.4	0.4	4067	0	36	0	8.5	1.9
HLF	78	0	3	1.1	-0.4	78	0	3	0	6.1	1.6
HRH	195	1	62	1.8	-0.2	193	0	62	0	8.6	1.4
IBE	2907	1	7	1.6	0.8	2851	0	7	0	7.3	1.2
ICE	1145	0	2	1.5	0.3	1134	0	3	0	7.0	0.4
IWD	221	0	4	1.6	-0.2	220	0	4	0	7.5	2.1
JAA	66	0	9	1.6	1.4	66	0	11	0	5.8	1.6
JAL	6841	0	5	1.5	0.1	6733	0	5	0	7.3	1.2
JAZ	680	0	4	1.7	1.2	667	0	4	0	7.7	0.7
JKK	294	1	5	1.3	0.2	266	0	4	0	7.4	-0.3
JMC	258	2	8	1.6	1.2	225	0	7	0	6.7	1.0
KAL	3914	0	7	1.5	-0.1	3887	0	8	0	7.9	0.9
KLM	2340	0	9	1.5	0.3	2340	0	10	0	6.8	0.9
LAN	102	3	12	2.3	0.7	112	0	13	0	13.5	0.0
LAP	60	2	23	1.8	1.0	60	0	23	0	9.6	2.4
LDA	86	0	0	0.9	-0.3	85	0	1	0	6.9	0.1
LDI	640	3	100	2.9	0.5	641	0	3	0	6.9	0.3
LIB	374	1	4	1.7	1.1	376	1	5	0	7.7	1.2
LOT	250	0	2	1.6	-1.0	251	0	5	0	6.7	0.6
LPR	31	0	0	1.7	0.6	31	0	3	0	12.8	-1.6
LTU	693	1	6	1.6	-0.3	686	0	5	0	6.9	0.9
MAS	604	0	4	1.4	0.2	608	1	8	0	9.8	0.7
MMZ	96	1	6	2.0	1.5	98	0	7	0	8.2	1.9
MON	62	2	8	1.9	0.5	64	0	5	0	7.9	1.0
MPD	434	0	3	1.3	0.1	432	0	3	0	8.3	1.0
MPH	1032	0	4	1.7	-0.4	1042	0	4	0	6.6	0.6
NCA	634	0	3	1.9	0.1	628	0	4	0	7.4	0.5
NWA	10951	0	9	1.6	0.6	10846	0	9	0	7.6	0.7
OAE	34	0	12	1.2	0.2	33	0	21	0	15.8	3.4
PAC	312	1	29	1.8	0.4	333	0	27	0	7.3	0.8
PAL	1296	0	4	1.4	0.2	1247	0	5	0	8.5	0.8
PAO	389	0	57	1.2	0.0	389	0	57	0	5.8	1.2
PUA	23	0	30	2.3	0.6	24	0	29	0	16.9	-2.5
QFA	4982	0	55	1.3	0.3	4975	0	55	0	6.4	0.3
RAF	44	0	5	1.9	0.6	44	0	5	0	6.9	0.8
RAM	87	2	9	1.5	-0.4	85	0	7	0	6.9	0.6
RCH	252	4	24	2.7	1.5	238	0	21	0	9.6	1.2
RJA	58	0	7	2.4	-0.7	56	2	11	0	12.0	1.7
RKA	133	0	4	1.7	-0.4	131	0	5	0	7.9	1.1
ROY	143	0	3	1.5	-0.5	142	0	76	0	8.4	-0.1
RRR	75	0	9	2.3	0.2	76	1	8	0	7.2	1.0
RYN	345	2	43	1.6	1.0	347	0	42	0	5.3	0.6
RZO	300	1	8	1.7	-0.2	300	0	8	0	8.9	0.9
SAA	431	1	3	1.2	-0.1	424	0	4	0	7.3	1.7
SAS	1454	0	33	1.5	-0.2	1448	0	34	0	7.1	0.4

		TEMPERATURE					WIND				
IDENT.	N.REP.	PG	PR	RMS	BIAS	N.REP.	PG	PR	PC	RMS	BIAS
SIA	602	1	4	1.6	0.2	604	0	3	0	6.1	0.7
SLR	250	0	8	1.5	-0.8	252	0	10	0	7.1	0.7
SOO	124	3	99	3.2	1.8	136	0	32	0	5.8	1.5
SVA	71	0	6	1.3	0.4	79	0	10	0	10.2	-0.2
SWR	75	1	8	1.3	0.2	75	0	8	0	7.8	1.1
TAM	24	0	21	3.0	0.1	24	0	13	0	9.9	1.8
TAP	725	1	8	1.7	-0.2	723	0	7	0	7.4	1.1
TBA	39	0	36	2.6	0.3	43	0	40	0	12.4	0.9
TCU	33	0	3	1.7	-0.5	33	0	0	0	5.7	0.9
THA	249	1	4	1.7	-0.2	247	0	6	0	6.5	0.3
THT	130	0	37	2.3	-0.2	127	0	37	0	7.6	2.6
TPA	31	0	3	2.2	0.7	31	0	3	0	6.6	2.0
TSC	225	0	2	1.6	0.2	227	0	4	0	8.1	0.8
TWA	1770	1	22	1.3	0.2	1729	0	23	0	6.7	1.3
UAL	123865	0	100	1.1	-0.2	123688	0	100	0	5.0	0.3
UPS	1628	1	22	1.7	0.0	1623	0	22	0	7.4	0.4
USA	180	0	2	1.6	0.2	165	0	2	0	8.2	1.1
VIR	658	0	2	1.4	-0.1	669	0	4	0	7.8	0.8
VKG	44	2	5	1.6	-0.1	44	0	5	0	10.6	-0.8
VPB	29	0	0	2.1	0.1	31	0	0	0	5.0	0.2
VRG	331	1	27	2.4	1.1	350	0	100	0	11.5	2.4
WOA	124	2	6	1.4	0.4	148	1	9	0	9.5	1.0
YSS	147	2	5	1.2	0.6	142	0	5	0	7.1	1.9
AN	23900	0	20	1.3	0.2	23900	0	20	0	5.5	0.3
AR	1325	0	100	3.4	2.9	1313	0	4	0	6.3	1.3
EU	84393	0	26	1.1	0.2	84393	0	26	0	4.9	0.5
KL	7907	0	9	1.4	0.8	7873	0	9	0	5.5	0.7
LH	2671	0	9	1.7	1.2	2657	0	9	0	5.3	0.8
LN	39	26	64	2.8	0.8	39	0	51	0	13.9	2.0
MK	3905	0	6	1.6	1.2	3878	0	34	0	8.2	1.2
NZ	2529	0	10	1.4	-0.1	2529	0	10	0	5.3	0.3
QF	32030	0	15	1.3	0.6	32024	0	15	0	5.3	0.6
SA	2158	0	11	1.7	1.2	2150	0	11	0	6.3	0.6
SV	1282	0	100	3.0	2.9	1264	0	2	0	4.8	0.4
WA	365	9	16	1.7	0.4	352	7	23	0	10.8	-1.7
XX	4709	2	8	1.5	0.3	5339	0	9	0	9.5	1.0
N	933	2	21	2.3	1.0	958	0	19	0	7.9	1.2
US ACARS	553595	0	47	1.2	0.4	553617	0	48	0	5.4	0.7

TABLE 4B

MONTHLY MONITORING OF AIRCRAFT OBSERVATIONS
MONITORING CENTRE: BRACKNELL
MONTH: September 2000

Monitoring procedures

Period :One calendar month.

Data monitored :Statistics for each airline carrier.

Area monitored :90°N - 90°S, 180°W - 180°E.

Standard of comparison :Background field from UKMO global model.

Observation times :All hours combined.

Level(s) monitored :1000.0 – 300.1 hPa

Elements monitored :TEMP in °C ; WIND in m s^{-1}

Parameters monitored

:N REP. :Number of observations received excluding duplicates.

:PG :Percentage of observations with gross errors.

:PR :Percentage of observations rejected by quality control including rejections from the duplicate check.

:PC :Percentage of observations with calm winds.

:RMS :Root Mean Square difference of observations from background values excluding those with gross errors in Temperature & vector wind.

:BIAS :Mean difference of observations from background values excluding those with gross errors in Temperature & Wind Speed.

GROSS ERROR LIMITS :10.0 °C ; 60 m s^{-1} Vector Wind

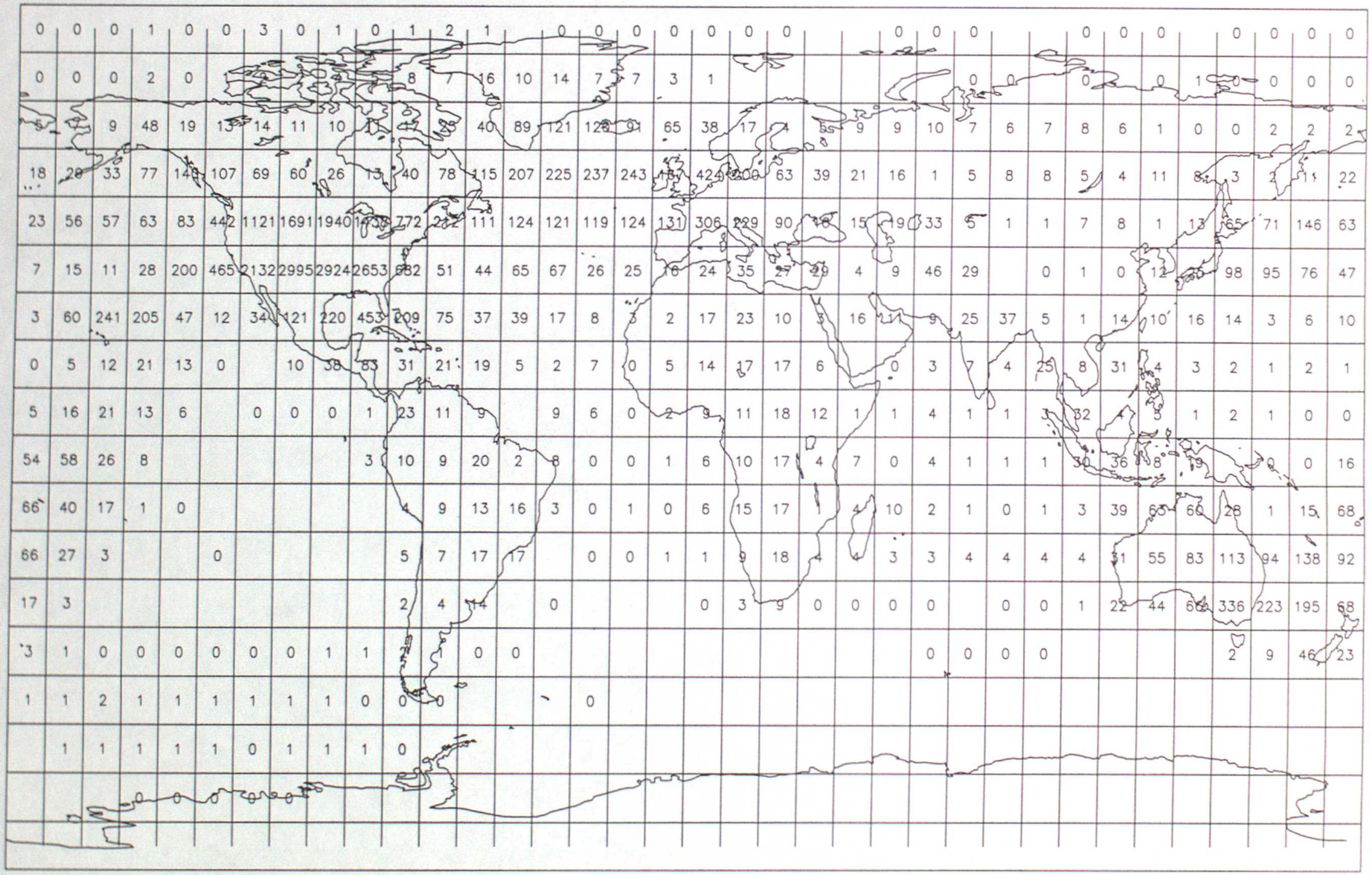
SELECTION CRITERIA :N REP $\geq$ 20

NB: All American ACARS data are grouped together and statistics are shown at the bottom of the table as "US ACARS". All ADS reports are similarly grouped together.

	TEMPERATURE					WIND					
IDENT.	N.REP.	PG	PR	RMS	BIAS	N.REP.	PG	PR	PC	RMS	BIAS
AAL	304	0	16	1.4	0.1	304	0	17	0	7.5	0.4
AAR	56	7	25	1.1	-0.3	56	0	21	0	6.4	0.2
AFL	32	3	3	1.7	0.6	35	3	9	0	9.2	-0.1
AFR	63	0	5	1.7	-0.3	63	0	6	0	7.1	-0.4
ANA	94	1	67	1.9	0.7	94	0	66	0	4.7	0.2
ANO	29	0	52	1.8	-0.6	29	0	52	0	3.7	0.9
ANQ	30	0	67	1.3	-0.7	30	0	67	0	5.4	1.0
ANZ	236	6	37	1.3	0.1	238	0	36	0	8.1	1.4
AOM	60	7	12	2.0	0.8	59	0	3	0	7.8	0.9
ARG	23	13	26	3.7	0.9	25	0	40	0	8.3	2.2
ATN	26	0	0	1.7	0.6	25	8	12	0	13.7	4.7
AVN	21	0	52	2.8	-1.0	21	0	48	0	6.6	2.1
AXF	45	0	42	1.2	0.4	45	0	42	0	7.3	2.2
CAL	20	0	15	1.5	-0.4	23	0	17	0	12.0	-0.6
CDN	39	3	18	0.8	0.2	40	0	18	0	8.7	2.3
CFC	121	2	18	1.9	1.1	123	0	20	0	8.4	1.9
CFG	28	0	0	1.0	-0.6	29	0	0	0	4.7	0.7
CLX	21	0	5	2.0	-0.4	21	0	5	0	8.8	1.2
CMI	45	0	4	2.3	-0.8	47	0	6	0	10.6	3.3
COA	198	1	28	1.2	0.5	191	0	31	0	11.7	2.7
CUB	43	0	0	2.3	1.9	44	0	7	0	9.9	2.6
DAF	20	0	0	0.9	0.5	20	0	0	0	8.4	2.2
DAL	157	0	33	1.3	0.3	166	0	35	0	6.8	-0.3
DHL	71	3	70	6.4	-6.2	71	0	30	0	15.4	5.4
DLH	179	0	11	1.4	0.3	180	0	11	0	6.7	0.4
EIA	40	10	43	2.2	0.6	39	0	36	0	6.4	0.8
EVA	68	1	29	1.7	-0.7	70	0	26	0	6.2	1.3
EWW	70	1	4	2.1	1.0	71	0	3	0	9.5	0.8
FDX	431	2	10	1.6	0.8	433	0	10	0	9.3	0.5
FIN	31	0	0	1.2	0.6	29	0	7	0	10.2	1.8
FWQ	43	5	65	1.2	0.2	43	0	63	0	8.1	1.6
FXI	23	0	4	2.9	1.0	24	0	8	0	12.6	2.9
GAF	45	2	2	1.0	0.1	45	0	0	0	5.3	1.1
GCO	196	1	3	1.5	0.6	200	0	100	0	16.5	3.7
GHA	51	2	8	2.2	0.0	50	0	6	0	9.9	1.9
HAL	126	3	44	1.8	0.2	121	0	43	0	6.1	1.0
HRH	26	8	69	1.5	1.1	26	0	69	0	14.8	5.3
IBE	81	10	25	2.4	1.2	81	0	15	0	8.5	0.4
ICE	105	1	2	1.0	0.0	101	0	2	0	7.0	0.7
JAL	85	6	9	1.6	0.2	85	0	11	0	7.3	0.0
JAZ	112	0	0	1.6	1.2	111	0	1	0	6.2	-0.3
JMC	38	3	5	1.4	0.8	38	0	5	0	7.8	0.6
KAL	96	5	17	1.7	-0.7	95	0	15	0	6.9	1.1
KIW	29	0	34	2.9	1.5	29	0	38	0	10.6	-2.0
KLM	91	0	8	1.4	0.7	89	0	8	0	5.8	0.8
LAN	54	2	9	3.0	-0.1	64	0	8	0	11.3	3.4
LIB	21	10	14	2.5	0.5	21	0	5	0	4.2	1.7
LTU	36	0	14	1.4	-0.5	34	0	18	0	9.2	2.6
MAS	40	0	18	0.9	0.2	40	0	30	0	14.4	1.2
MPH	34	3	9	0.9	0.2	35	0	9	0	4.9	1.4
NCA	103	1	1	2.1	-0.1	98	0	1	0	6.4	-0.2
NWA	377	1	11	1.9	0.4	378	0	10	0	9.1	0.6
PAC	59	0	8	1.4	0.5	63	0	8	0	7.1	0.4
PAL	64	0	6	1.1	-0.4	58	0	7	0	4.4	0.6
PAO	20	0	65	1.0	-0.3	20	0	65	0	5.7	1.8
QFA	184	6	42	1.2	0.5	185	0	39	0	7.1	1.4

	TEMPERATURE					WIND					
IDENT.	N.REP.	PG	PR	RMS	BIAS	N.REP.	PG	PR	PC	RMS	BIAS
RCH	97	4	10	2.0	1.0	105	0	19	0	12.9	1.9
RRR	168	3	11	3.7	2.8	168	0	7	0	8.6	-0.1
SAA	43	0	0	0.9	-0.4	42	0	0	0	5.3	0.3
SAS	85	0	39	1.1	0.0	85	0	41	0	7.9	1.8
SIA	46	0	7	1.4	0.1	46	0	7	0	5.4	1.9
SWR	41	0	10	1.3	0.5	41	0	20	0	14.7	7.8
UAL	192587	0	100	1.2	-0.1	192168	0	100	0	4.3	0.5
UPS	72	1	22	2.3	0.2	72	1	19	0	7.4	1.3
VHJ	83	1	1	2.0	-0.5	79	0	3	0	9.2	-0.4
VTA	39	0	21	2.5	-0.4	39	0	15	0	5.7	0.4
VVP	20	0	45	4.3	-1.5	20	0	35	0	11.0	4.6
VVR	20	0	10	2.1	-1.5	20	0	10	0	10.0	2.9
AN	82664	0	70	1.4	0.1	82663	0	70	0	4.6	0.2
AR	1005	4	100	2.4	1.6	986	0	46	0	5.1	0.9
EU	555612	0	79	1.1	0.1	554938	0	79	0	3.7	0.1
KL	6389	0	57	1.3	0.4	6362	0	57	0	4.1	0.4
LH	1105	0	64	1.3	0.3	1100	0	64	0	4.8	0.9
MK	3012	0	53	1.5	0.5	2989	0	65	0	6.7	1.5
NZ	7726	0	56	1.4	0.3	7726	0	57	0	5.3	0.7
QF	23163	0	59	1.3	0.5	23167	0	58	0	4.7	0.1
SA	2229	0	59	1.4	0.3	2214	0	59	0	5.5	0.8
SV	2624	1	100	3.3	2.9	2611	0	48	0	4.6	1.3
WA	44	20	23	2.1	0.8	43	5	30	0	9.9	-0.4
XX	593	6	12	2.0	0.0	624	0	14	0	11.9	2.3
US ACARS	514570	0	52	1.2	0.3	512499	0	53	0	4.7	0.4

MEAN DAILY COUNT OF AIRCRAFT 300 – 150 HPA FIGURE 3A
SEPTEMBER 2000
OBSERVATIONS WITH O–B VECTOR DIFFERENCE GREATER THAN 60 MPS EXCLUDED
GLOBAL AVERAGE NUMBER OF OBSERVATIONS IN 24 HOURS = 31807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0 0 0 2 0 8 7 16 10 14 7 7 3 1 0 0 0 0 1 0 0 0 0
5 7 9 48 19 13 14 11 10 11 47 25 40 89 121 128 91 65 38 17 4 55 9 9 10 7 6 7 8 6 1 0 0 2 2 2
18 28 33 77 149 107 69 60 26 13 40 78 115 207 225 237 243 137 424 200 63 39 21 16 1 5 8 8 5 4 11 8 3 2 11 22
23 56 57 63 83 442 1121 1691 1940 1438 772 212 111 124 121 119 124 131 306 229 90 16 15 19 33 5 1 1 7 8 1 13 65 71 146 63
7 15 11 28 200 465 2132 2995 2924 2653 682 51 44 65 67 26 25 16 24 35 27 29 4 9 46 29 0 1 0 12 35 98 95 76 47
3 60 241 205 47 12 34 121 220 453 209 75 37 39 17 8 3 2 17 23 10 3 16 11 9 25 37 5 1 14 10 16 14 3 6 10
0 5 12 21 13 0 10 38 83 31 21 19 5 2 7 0 5 14 17 17 6 0 3 7 4 25 8 31 4 3 2 1 2 1
5 16 21 13 6 0 0 0 1 23 11 9 9 6 0 2 9 11 18 12 1 1 4 1 1 3 32 4 5 1 2 1 0 0
54 58 26 8 3 10 9 20 2 8 0 0 1 6 10 17 4 7 0 4 1 1 1 30 36 8 19 0 0 16
66 40 17 1 0 4 9 13 16 3 0 1 0 6 15 17 1 4 10 2 1 0 1 3 39 63 60 28 1 15 68
66 27 3 0 5 7 17 17 0 0 1 1 9 18 4 4 3 3 4 4 4 4 31 55 83 113 94 138 92
17 3 2 4 14 0 0 3 9 0 0 0 0 0 0 1 22 44 66 336 223 195 68
3 1 0 0 0 0 0 0 1 1 2 1 0 0 0 0 0 0 2 9 46 23
1 1 2 1 1 1 1 1 1 0 0 0 0
1 1 1 1 1 0 1 1 1 0
0 0 0 0 0

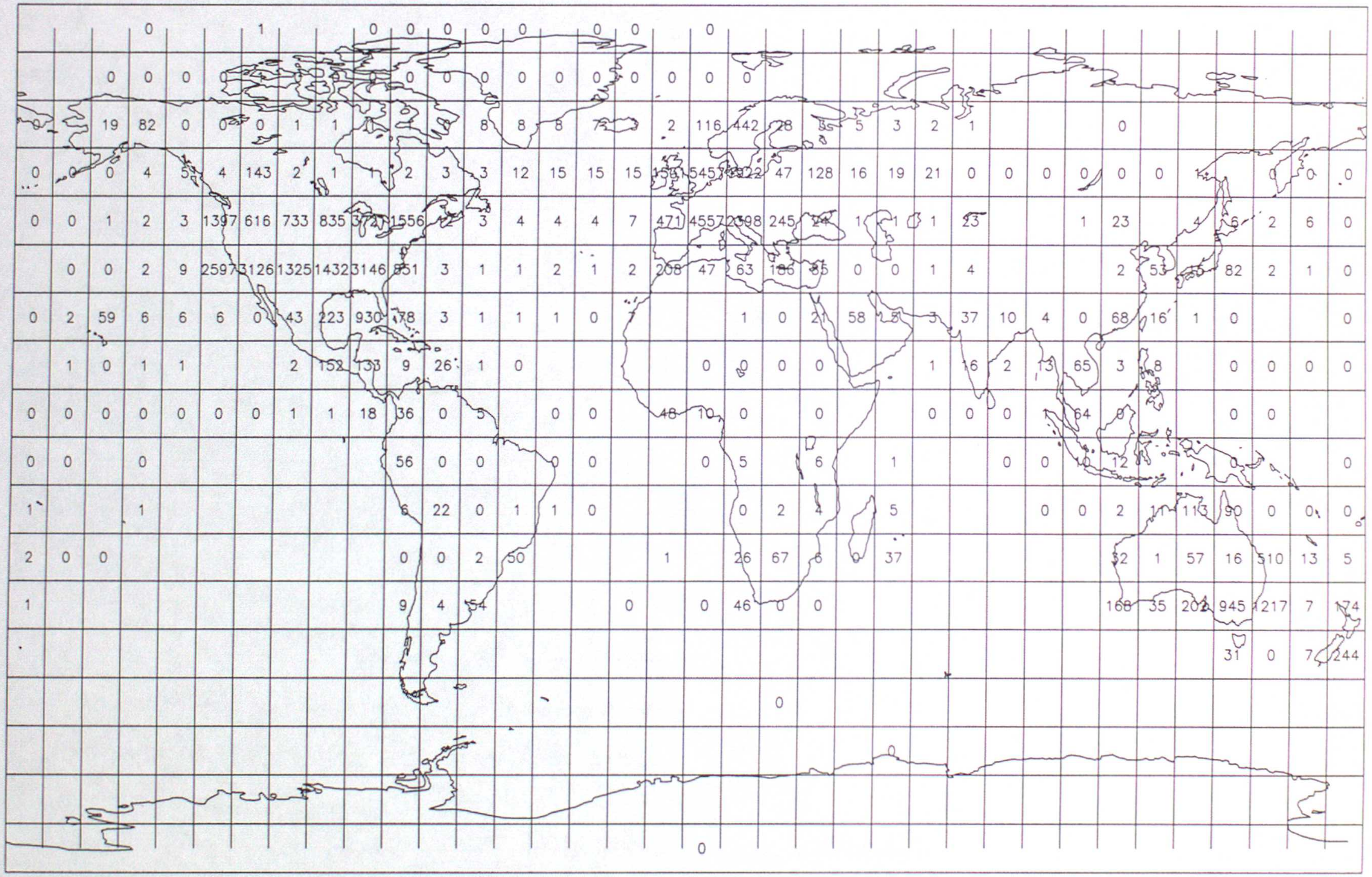
MEAN DAILY COUNT OF AIRCRAFT 1000 – 301 HPA

FIGURE 3B

SEPTEMBER 2000

OBSERVATIONS WITH O–B VECTOR DIFFERENCE GREATER THAN 60 MPS EXCLUDED

GLOBAL AVERAGE NUMBER OF OBSERVATIONS IN 24 HOURS = 46544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0 0 0 0 0 0 0 0 0 0 0 0
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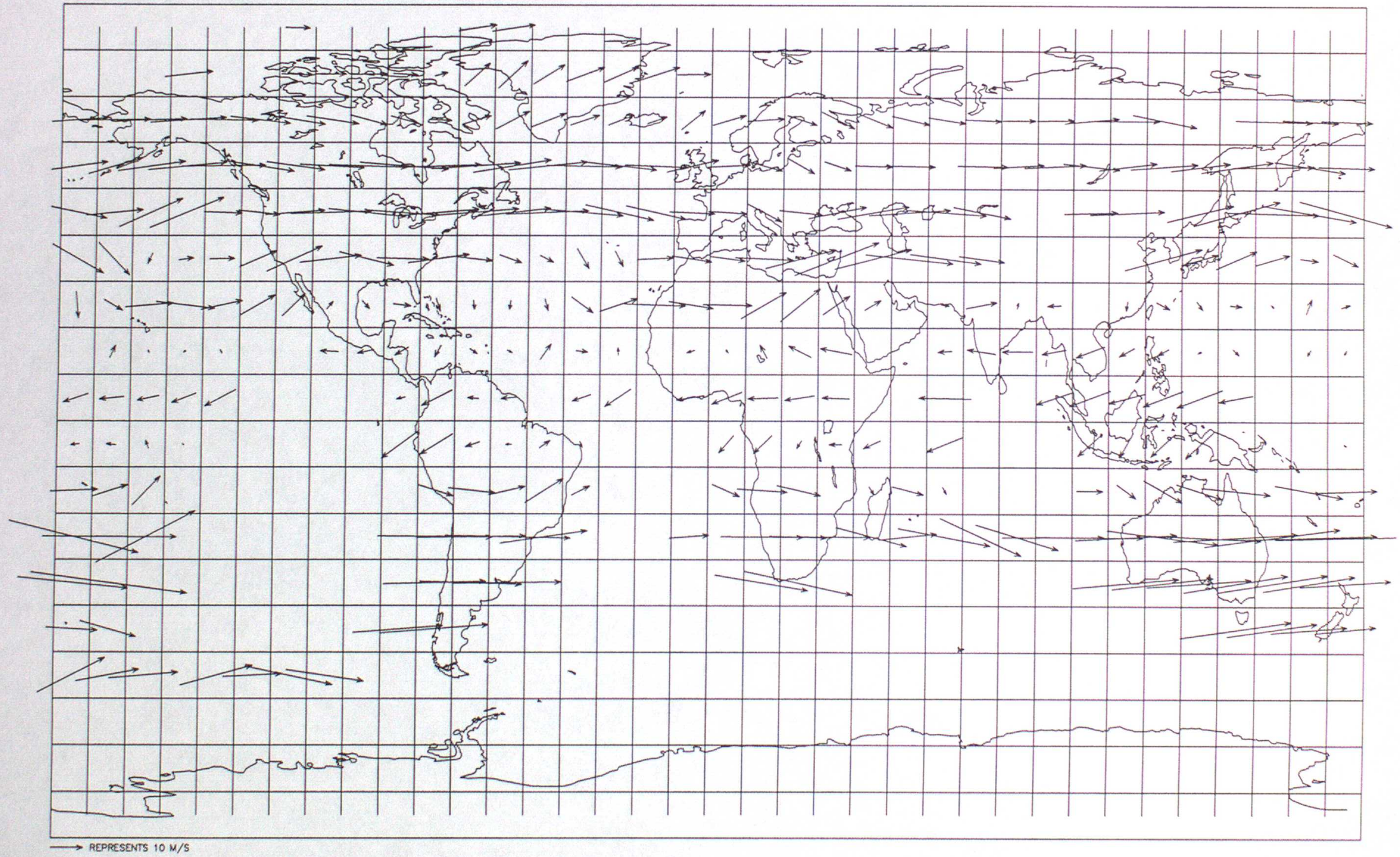
0 0 0 4 5 4 143 2 1 1 2 3 3 12 15 15 15 1581 5457 3322 47 128 16 19 21 0 0 0 0 0 0 1 0 0 0
0 0 1 2 3 1397 616 733 835 3727 1556 12 3 4 4 4 7 471 4557 2398 245 24 1 1 1 23 1 23 4 6 2 6 0
0 0 2 9 2597 3126 1325 1432 3146 851 3 1 1 2 1 2 208 47 63 186 85 0 0 1 4 2 53 5 82 2 1 0
0 2 59 6 6 6 0 43 223 930 178 3 1 1 1 0 7 1 0 21 58 15 3 37 10 4 0 68 16 1 0 0
1 0 1 1 2 152 133 9 26 1 0 0 0 0 0 1 16 2 13 65 3 8 0 0 0 0
0 0 0 0 0 0 0 1 1 18 36 0 5 0 0 48 10 0 0 0 0 0 64 0 0 0
0 0 0 56 0 0 0 0 0 5 6 1 0 0 10 12 0 0
1 1 6 22 0 1 1 0 0 2 4 5 0 0 2 1 113 90 0 0 0
2 0 0 0 0 2 50 1 26 67 6 0 37 32 1 57 16 510 13 5
1 9 4 54 0 0 46 0 0 168 35 202 945 1217 7 174
31 0 7 244
0
0

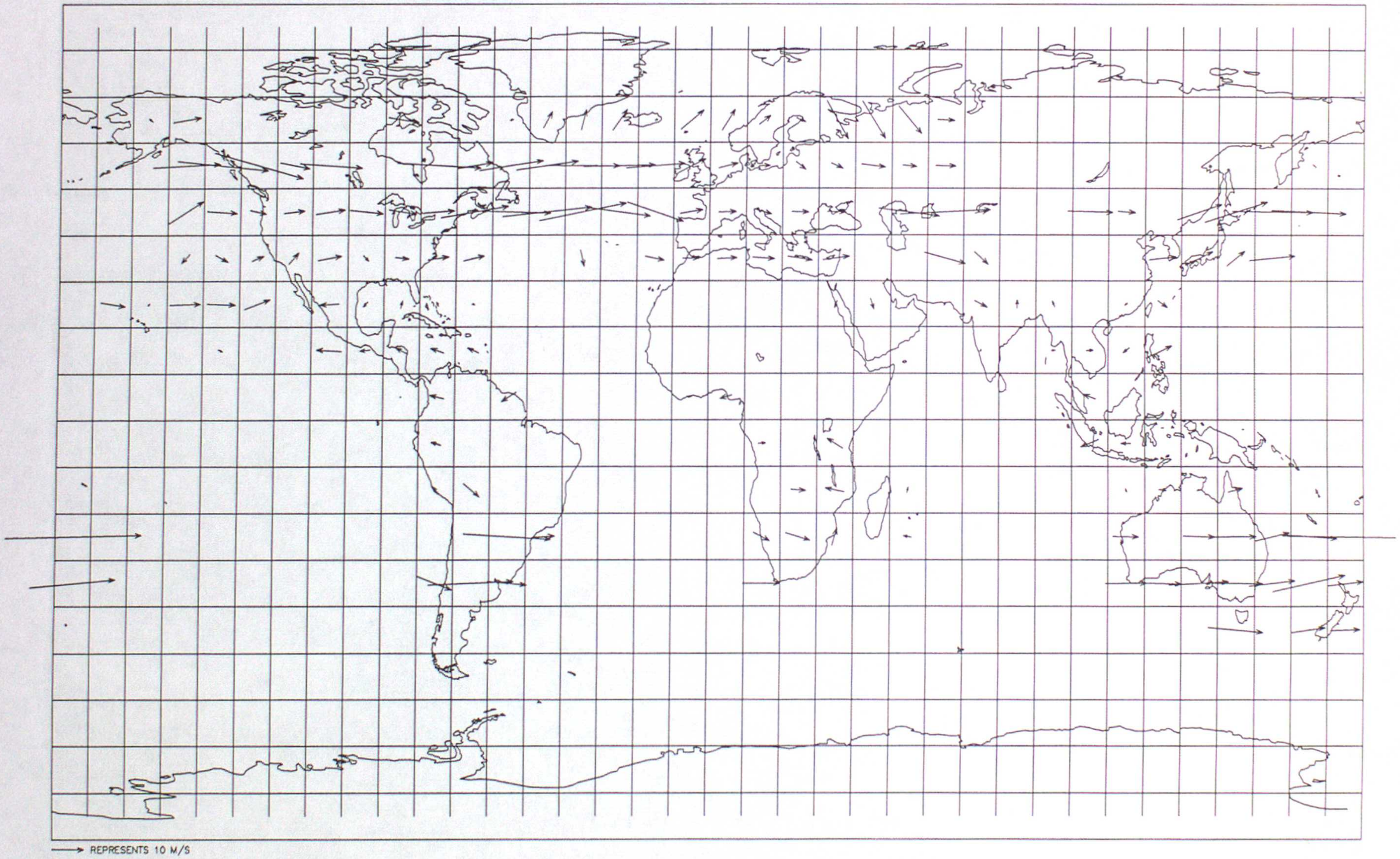
AIRCRAFT MEAN WINDS BETWEEN 300 AND 150 HPA
SEPTEMBER 2000
OBSERVATIONS WITH O–B VECTOR DIFFERENCE GREATER THAN 60 MPS EXCLUDED
VALUES ARE PRINTED WHERE MORE THAN 30 OBS ARE PRESENT

FIGURE 4A



AIRCRAFT MEAN WINDS BETWEEN 1000 AND 301 HPA
SEPTEMBER 2000
OBSERVATIONS WITH O–B VECTOR DIFFERENCE GREATER THAN 60 MPS EXCLUDED
VALUES ARE PRINTED WHERE MORE THAN 30 OBS ARE PRESENT

FIGURE 4B



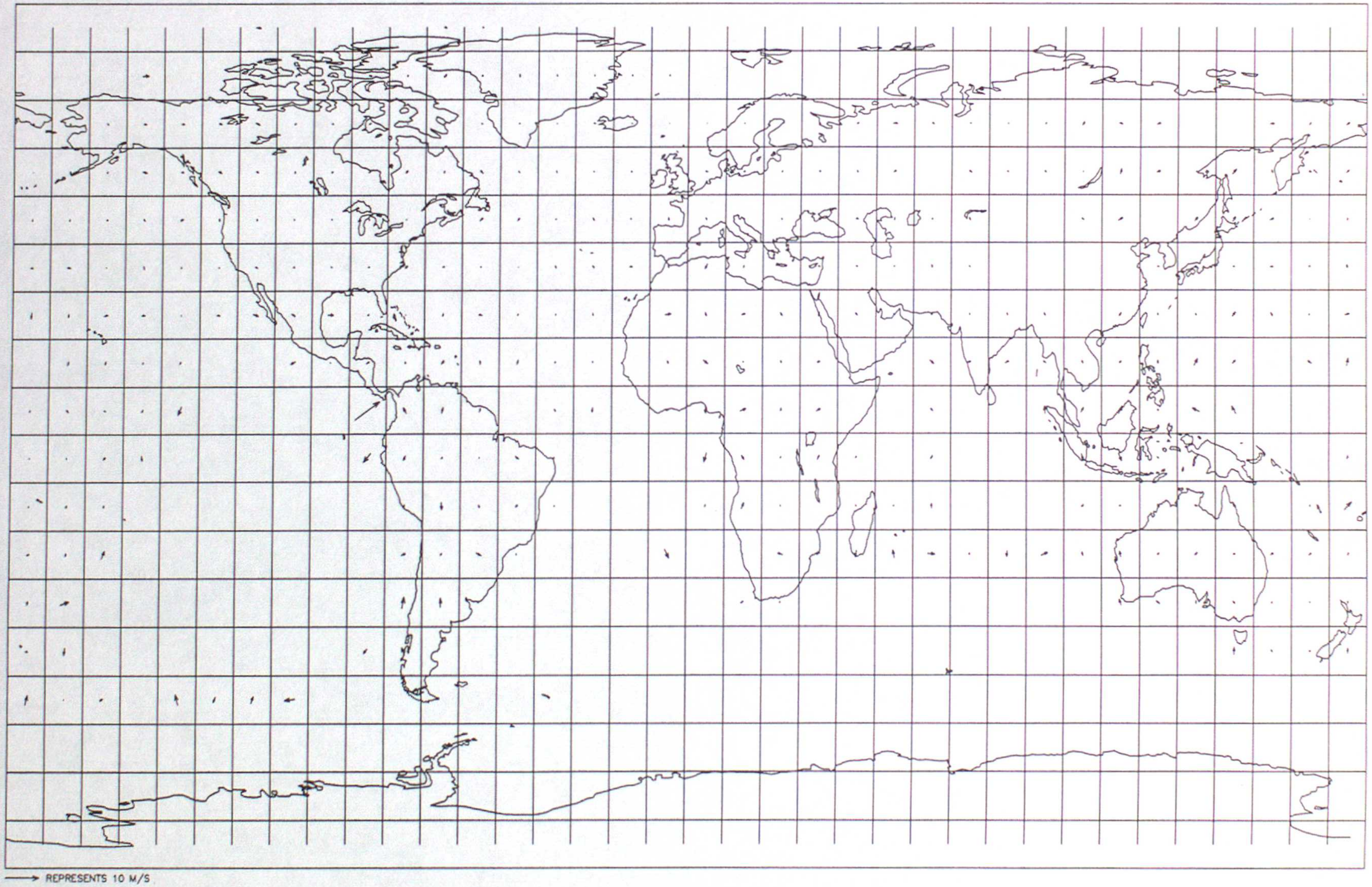
AIRCRAFT MEAN O-B WINDS BETWEEN 300 AND 150 HPA

FIGURE 5A

SEPTEMBER 2000

OBSERVATIONS WITH O-B VECTOR DIFFERENCE GREATER THAN 60 MPS EXCLUDED

VALUES ARE PRINTED WHERE MORE THAN 30 OBS ARE PRESENT



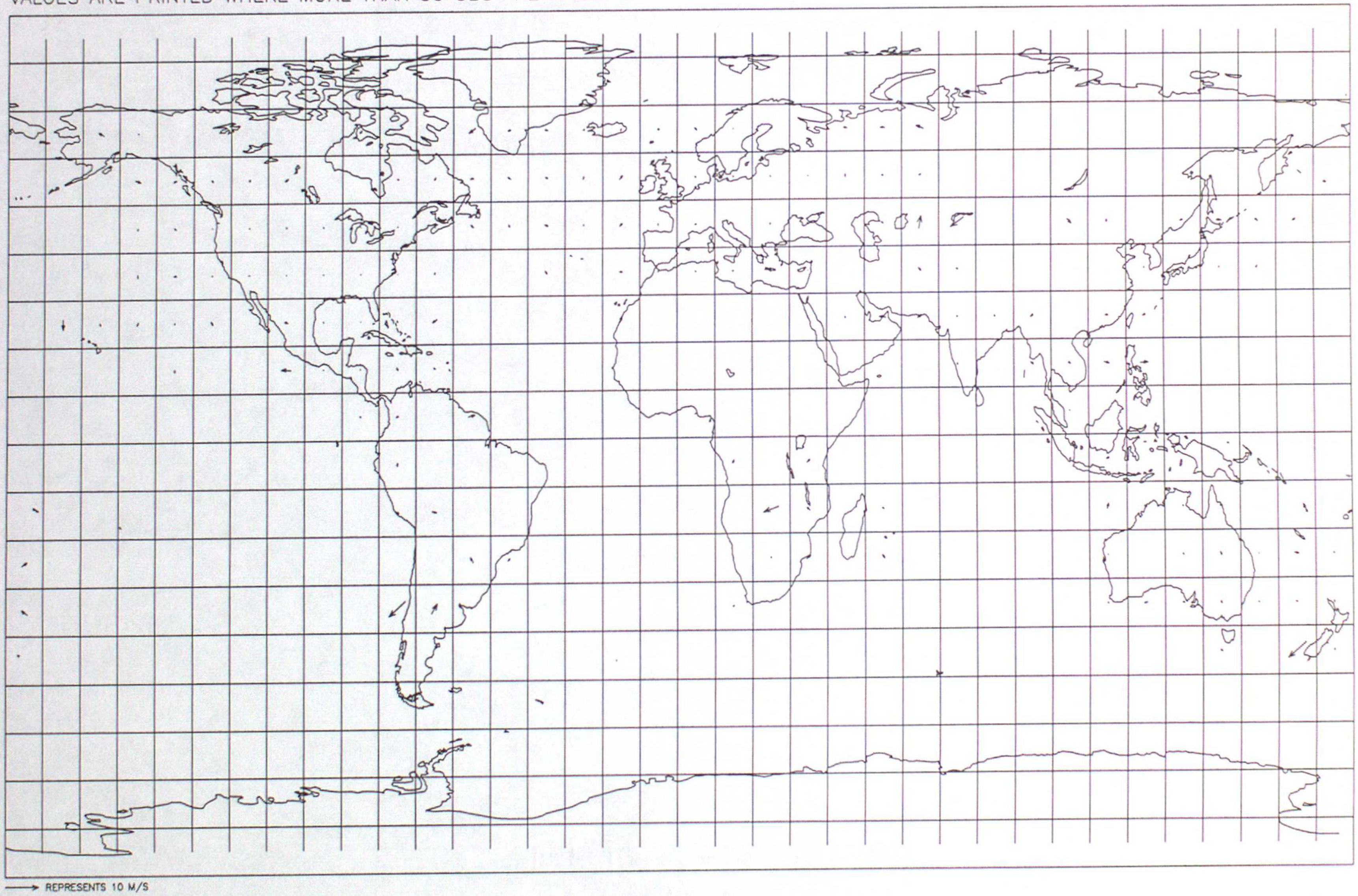
AIRCRAFT MEAN O-B WINDS BETWEEN 1000 AND 301 HPA

SEPTEMBER 2000

OBSERVATIONS WITH O-B VECTOR DIFFERENCE GREATER THAN 60 MPS EXCLUDED

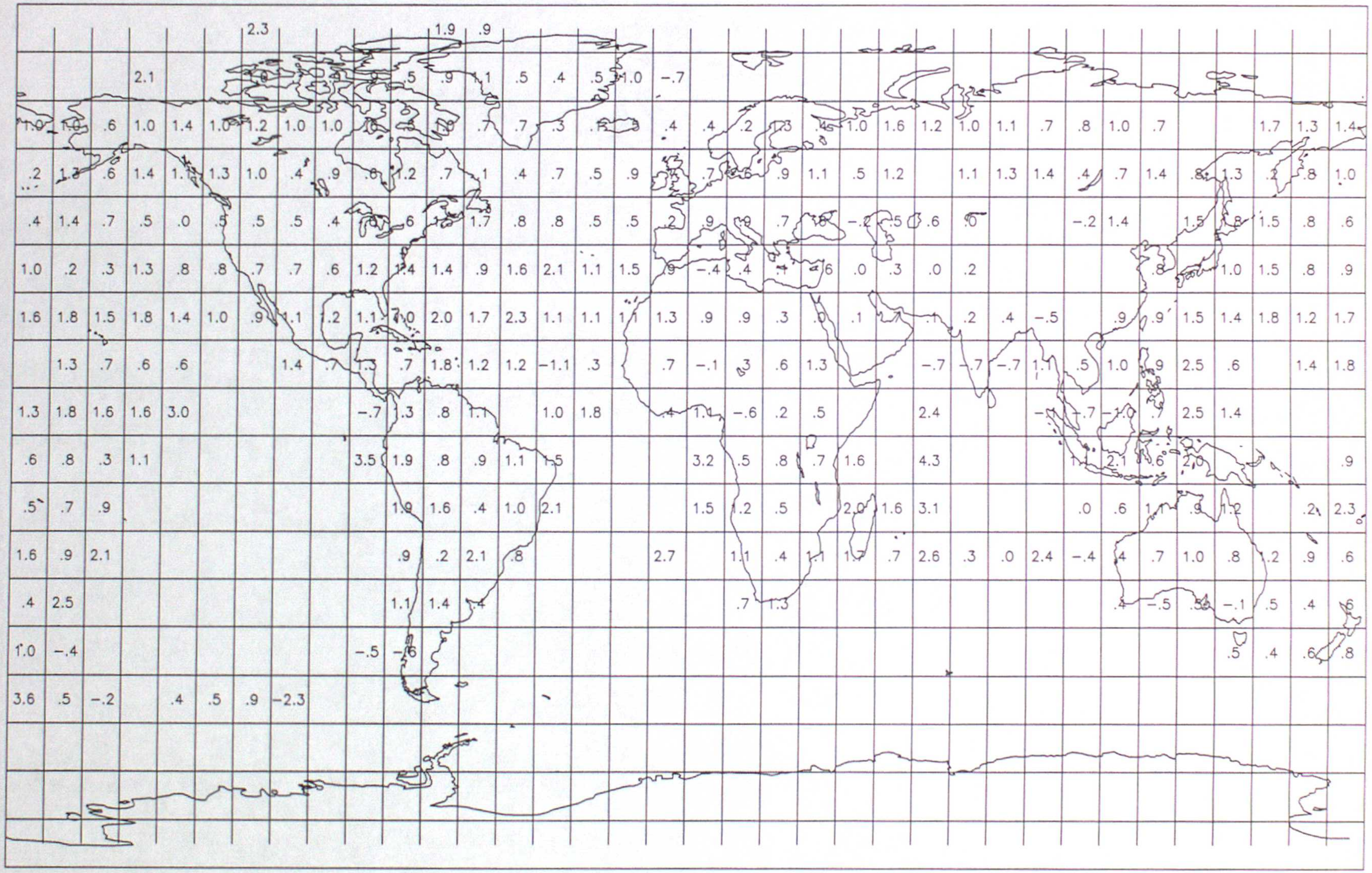
VALUES ARE PRINTED WHERE MORE THAN 30 OBS ARE PRESENT

FIGURE 5B



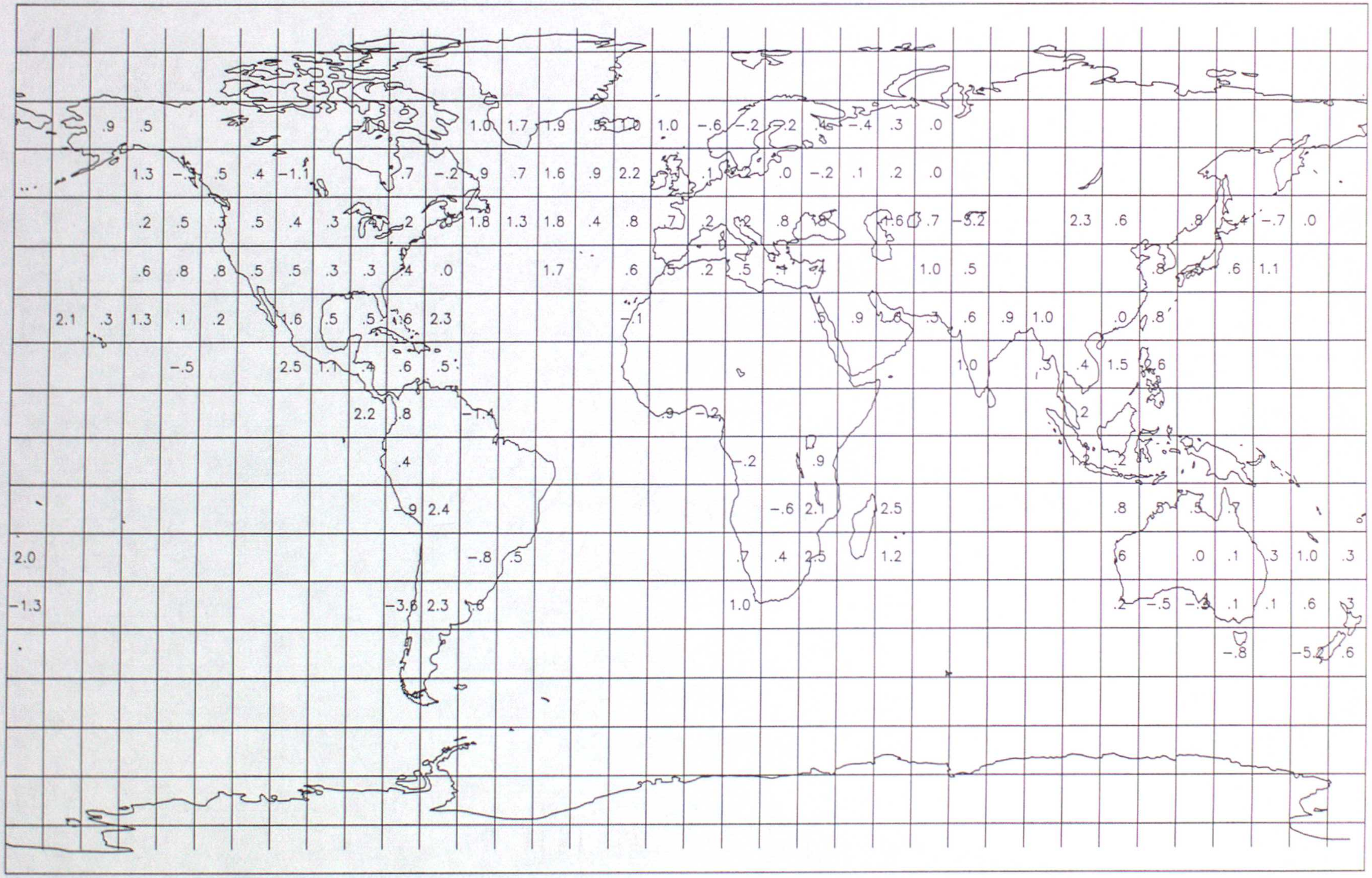
AIRCRAFT : MEAN O–B SPEEDS (M/S) 300 – 150 HPA
SEPTEMBER 2000
OBSERVATIONS WITH O–B VECTOR DIFFERENCE > 60 MPS EXCLUDED
VALUES ARE PRINTED WHERE > 30 OBS ARE PRESENT

FIGURE 6A


2.3 1.9 .9
2.1 .5 .9 1.1 .5 .4 .5 1.0 –.7
1.0 1.0 .6 1.0 1.4 1.0 1.2 1.0 1.0 .7 .7 .3 .4 .4 .2 1.3 1.0 1.6 1.2 1.0 1.1 .7 .8 1.0 .7 1.7 1.3 1.4
.2 1.3 .6 1.4 1.1 1.3 1.0 .4 .9 .8 1.2 .7 .1 .4 .7 .5 .9 .7 .9 1.1 .5 1.2 1.1 1.3 1.4 .4 .7 1.4 .8 1.3 .2 .8 1.0
.4 1.4 .7 .5 .0 .5 .5 .5 .4 .6 1.7 .8 .8 .5 .5 .2 .9 .8 .7 .8 –.2 .5 .6 .0 –.2 1.4 1.5 .8 1.5 .8 .6
1.0 .2 .3 1.3 .8 .8 .7 .7 .6 1.2 1.4 1.4 .9 1.6 2.1 1.1 1.5 .9 –.4 .4 .4 .6 .0 .3 .0 .2 .8 1.0 1.5 .8 .9
1.6 1.8 1.5 1.8 1.4 1.0 .9 1.1 1.2 1.1 2.0 2.0 1.7 2.3 1.1 1.1 1.1 1.3 .9 .9 .3 .0 .1 .7 .1 .2 .4 –.5 .9 .9 1.5 1.4 1.8 1.2 1.7
1.3 .7 .6 .6 1.4 .7 .3 .7 1.8 1.2 1.2 –1.1 .3 .7 –.1 .3 .6 1.3 –.7 –.7 –.7 1.1 .5 1.0 .9 2.5 .6 1.4 1.8
1.3 1.8 1.6 1.6 3.0 –.7 1.3 .8 1.1 1.0 1.8 .4 1.1 –.6 .2 .5 2.4 –.1 –.7 –1.0 .7 2.5 1.4
.6 .8 .3 1.1 3.5 1.9 .8 .9 1.1 1.5 3.2 .5 .8 .7 1.6 4.3 1.1 2.1 .6 2.0 .9
.5 .7 .9 1.9 1.6 .4 1.0 2.1 1.5 1.2 .5 2.0 1.6 3.1 .0 .6 1.1 .9 1.2 .2 2.3
1.6 .9 2.1 .9 .2 2.1 .8 2.7 1.1 .4 1.1 1.7 .7 2.6 .3 .0 2.4 –.4 .4 .7 1.0 .8 1.2 .9 .6
.4 2.5 1.1 1.4 .4 .7 1.3 .4 –.5 .5 –.1 .5 .4 .6
1.0 –.4 –.5 –.6 .5 .4 .6 .8
3.6 .5 –.2 .4 .5 .9 –2.3

AIRCRAFT : MEAN O-B SPEEDS (M/S) 1000 - 301 HPA
SEPTEMBER 2000
OBSERVATIONS WITH O-B VECTOR DIFFERENCE > 60 MPS EXCLUDED
VALUES ARE PRINTED WHERE > 30 OBS ARE PRESENT

FIGURE 6B


.9 .5 1.0 1.7 1.9 .5 1.0 1.0 -.6 -.2 -.2 .4 -.4 .3 .0
1.3 -.3 .5 .4 -1.1 .7 -.2 .9 .7 1.6 .9 2.2 .1 .2 .0 -.2 .1 .2 .0
.2 .5 .3 .5 .4 .3 .4 .2 1.8 1.3 1.8 .4 .8 .7 .2 .2 .8 .8 1.6 .7 -3.2 2.3 .6 .8 .4 -.7 .0
.6 .8 .8 .5 .5 .3 .3 .4 .0 1.7 .6 .5 .2 .5 .1 .4 1.0 .5 .8 .6 1.1
2.1 .3 1.3 .1 .2 1.6 .5 .5 .6 2.3 -.1 .5 .9 1.6 .3 .6 .9 1.0 .0 .8
-.5 2.5 1.1 .4 .6 .5 1.0 .3 .4 1.5 2.6
2.2 .8 -1.4 .9 -.2 .2
.4 -.2 .9 1.2 .2
-.9 2.4 -.6 2.1 2.5 .8 .5 .5 .7
2.0 -.8 .5 .7 .4 2.5 1.2 .6 .0 .1 .3 1.0 .3
-1.3 -3.6 2.3 .6 1.0 .2 -.5 -.3 .1 .1 .6 .3
-.8 -5.2 .6

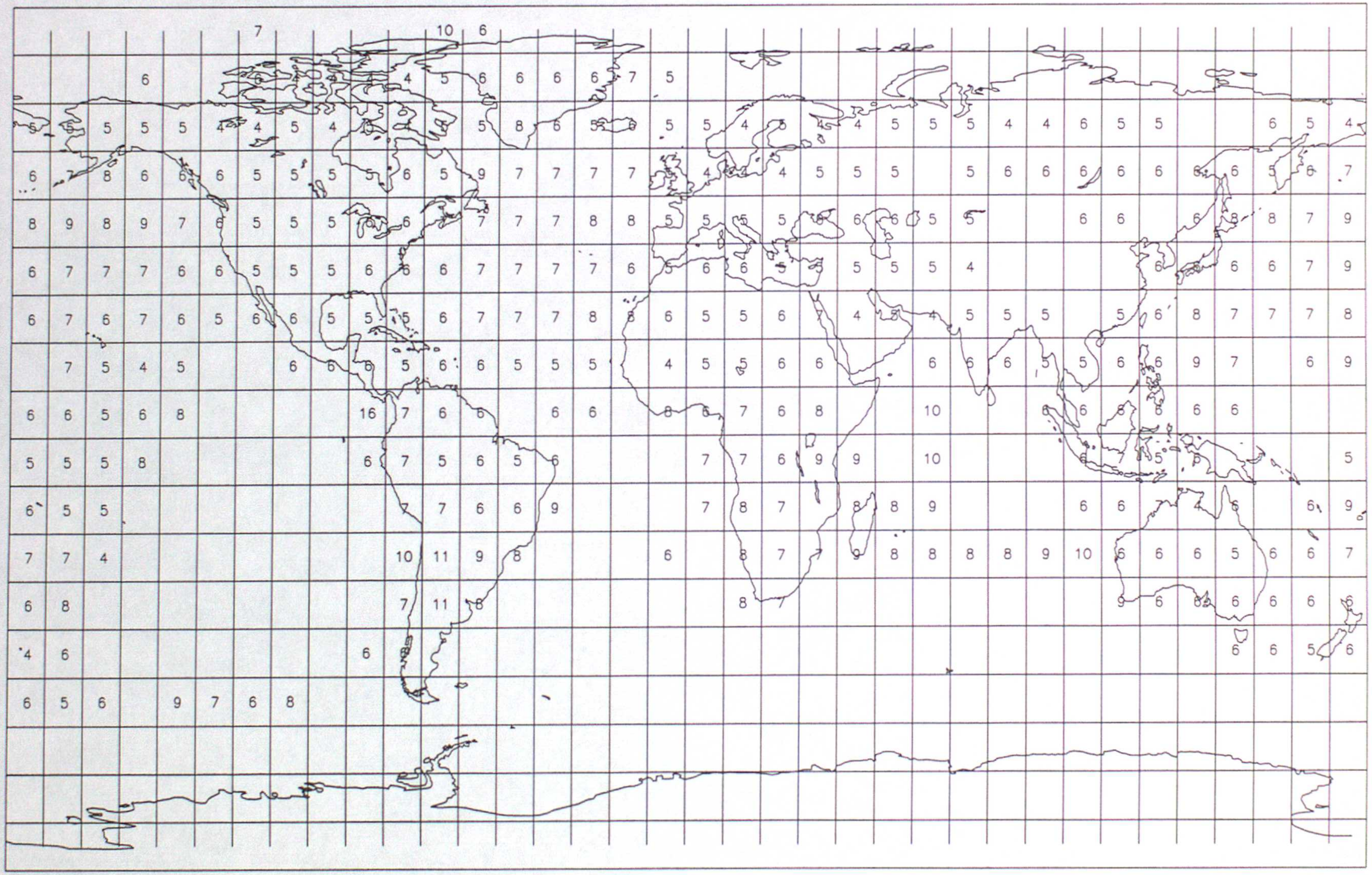
AIRCRAFT : RMS O–B VECTOR (M/S) 300 – 150 HPA

FIGURE 7A

SEPTEMBER 2000

OBSERVATIONS WITH O–B VECTOR DIFFERENCE GREATER THAN 60 MPS EXCLUDED

VALUES ARE PRINTED WHERE > 30 OBS ARE PRESENT


7 10 6
6 4 5 6 6 6 6 7 5
5 5 5 5 5 4 4 5 4 5 5 8 6 5 6 5 5 4 5 4 5 5 5 4 4 6 5 5 6 5 4
6 7 8 6 6 6 5 5 5 5 6 5 9 7 7 7 7 4 4 5 5 5 5 6 6 6 6 6 6 6 5 6 7
8 9 8 9 7 6 5 5 5 6 7 7 7 8 8 5 5 5 5 6 6 6 5 5 6 6 6 8 8 7 9
6 7 7 7 6 6 5 5 5 6 6 6 7 7 7 7 6 5 6 6 5 5 5 5 4 6 6 6 7 9
6 7 6 7 6 5 6 6 5 5 5 6 7 7 7 8 8 6 5 5 6 7 4 5 4 5 5 5 5 6 8 7 7 7 8
7 5 4 5 6 6 6 5 6 6 5 5 5 4 5 5 6 6 6 6 6 5 5 6 6 9 7 6 9
6 6 5 6 8 16 7 6 6 6 6 8 6 7 6 8 10 6 6 6 6 6 6
5 5 5 8 6 7 5 6 5 6 7 7 6 9 9 10 6 5 5
6 5 5 7 7 6 6 9 7 8 7 8 8 9 6 6 7 4 6 6 9
7 7 4 10 11 9 8 6 8 7 7 9 8 8 8 8 9 10 6 6 6 5 6 6 7
6 8 7 11 8 8 7 9 6 6 6 6 6 6
4 6 6 6 6 5 6
6 5 6 9 7 6 8

AIRCRAFT : RMS O–B VECTOR (M/S) 1000 – 301 HPA

FIGURE 7B

SEPTEMBER 2000

OBSERVATIONS WITH O–B VECTOR DIFFERENCE GREATER THAN 60 MPS EXCLUDED

VALUES ARE PRINTED WHERE > 30 OBS ARE PRESENT

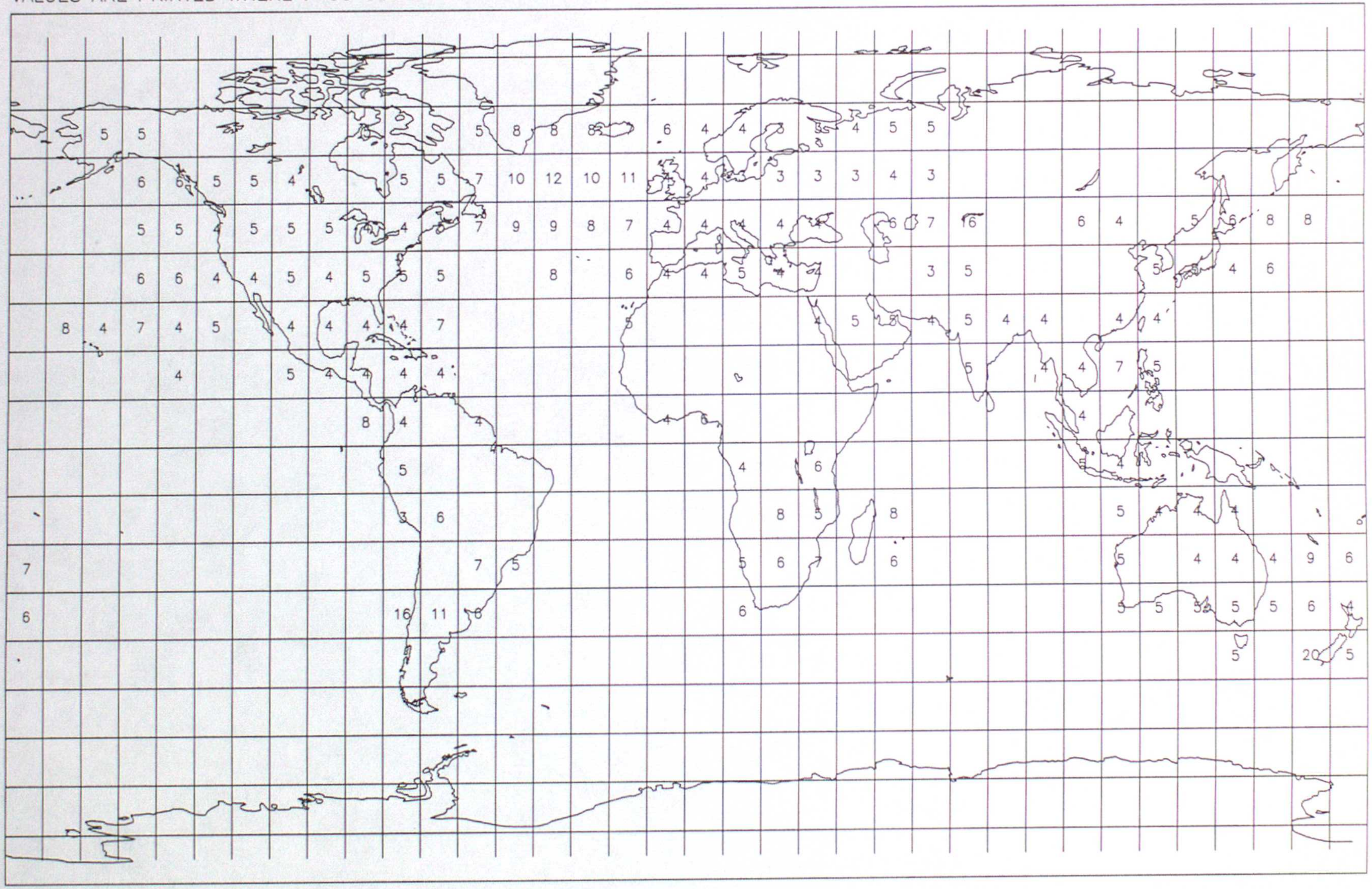

5 5 5 8 8 8 6 4 4 4 4 5 5
6 6 5 5 4 5 5 7 10 12 10 11 4 4 3 3 3 4 3
5 5 4 5 5 5 4 7 9 9 8 7 4 4 4 4 6 7 16 6 4 5 6 8 8
6 6 4 4 5 4 5 5 5 8 6 4 4 5 4 4 3 5 5 4 6
8 4 7 4 5 4 4 4 4 7 5 4 5 8 4 5 4 4 4 4
4 5 4 4 4 4 5 4 4 7 5
8 4 4 4 6 4
5 4 6 4
3 6 8 5 8 5 4 4 4
7 7 5 5 6 6 5 4 4 4 9 6
6 16 11 8 6 5 5 5 5 5 6 4
5 20 5

TABLE 5

MONTHLY MONITORING OF RADIOSONDE OBSERVATIONS
MONITORING CENTRE: BRACKNELL
MONTH: September 2000

Monitoring procedures

Period		:One calendar month.
Data monitored		:Reports from each unique identifier for radiosonde TEMPs.
Area monitored		:90°N - 90°S, 180°W - 180°E.
Standard of comparison		:Background field from UKMO global model.
Observation times		:00 UTC and 12 UTC.
Level(s) monitored		:Standard levels between 1000.0 - 30.0 hPa
Element monitored		:GEOPOTENTIAL HEIGHT IN metres
Parameters monitored	:NUM OBS	:Number of observations available at level shown during period.
	:NUM GROSS	:Number of gross errors at level shown duringperiod.
	:% REJ	:Percentage of observations rejected by quality control at level shown during period excluding those with gross errors.
	:SD	:SD of difference of observations from background values at level shown excluding those with gross errors.
	:BIAS	:Mean difference of observations from background values at level shown excluding those with gross errors.
	:RMS	:Root Mean Square difference of observations from background values at level shown excluding those with gross errors.
	:NUM LEVELS	:Number of levels satisfying selection criteria.
GROSS ERROR LIMITS	:Defined in Appendix I.1	
SELECTION CRITERIA	: ≥3 levels with ≥10 observations and ≥ 100 m weighted RMS.	

ONLY THE WORST LEVEL IS SHOWN WITH UNWEIGHTED RMS

WMO IDENT	OBS TIME	ELM	LEV	LAT/LONG	NUM OBS	NUM GROSS	SD	BIAS	RMS	NUM LEVELS
42027	12	Z	1000	34/ 75	28	0	24.8	-36.9	44.5	5
42101	12	Z	100	30/ 76	21	2	67.3	166.7	179.7	5
42339	00	Z	150	26/ 73	15	0	130.3	-8.1	130.6	6
42339	12	Z	150	26/ 73	14	1	95.1	-24.4	98.2	4
42369	00	Z	100	27/ 81	17	0	108.2	-39.8	115.3	4
42647	12	Z	100	23/ 73	12	1	67.1	148.3	162.8	6
42867	12	Z	150	21/ 79	18	0	91.8	67.7	114.1	4
43003	00	Z	100	19/ 73	10	6	82.6	169.7	188.7	5
43003	12	Z	200	19/ 73	12	5	28.9	202.6	204.6	6
43014	00	Z	100	20/ 75	14	1	87.0	109.5	139.9	4
43014	12	Z	100	20/ 75	15	4	84.4	181.7	200.4	5
43041	00	Z	150	19/ 82	10	0	76.6	84.1	113.8	6
43041	12	Z	200	19/ 82	9	0	81.8	52.0	96.9	4
43185	00	Z	100	16/ 81	12	0	86.7	77.4	116.3	4
43185	12	Z	100	16/ 81	11	0	88.8	139.5	165.4	8
43192	00	Z	100	15/ 74	17	0	72.4	-130.5	149.2	4
43285	12	Z	150	13/ 75	23	0	98.2	40.2	106.1	5
43295	00	Z	150	13/ 78	15	0	104.5	38.3	111.3	6
43311	00	Z	250	11/ 73	18	1	78.3	13.4	79.4	4
43353	12	Z	150	10/ 76	13	0	70.9	74.5	102.8	6
43369	12	Z	100	8/ 73	17	2	74.9	124.1	145.0	7
53463	00	Z	150	41/ 112	27	0	106.3	-77.4	131.5	5
53463	12	Z	150	41/ 112	25	0	88.9	-61.8	108.3	4
72520	00	Z	500	40/ 80	23	1	82.3	18.9	84.4	10
72520	12	Z	1000	40/ 80	18	8	28.6	51.5	58.9	9
84628	12	Z	850	-12/ -77	26	0	7.8	-77.0	77.4	8
97560	00	Z	300	-1/ 136	17	0	29.1	-62.9	69.3	4

AVAILABILITY – TEMP – 500 HPA GEOPOTENTIAL – SEPTEMBER 2000

FIGURE 8

ALL HOURS

10 DEGREE BOX AVERAGE NUMBER OF OBSERVATIONS IN 24 HOURS

GLOBAL AVERAGE NUMBER OF OBSERVATIONS IN 24 HOURS – 1129

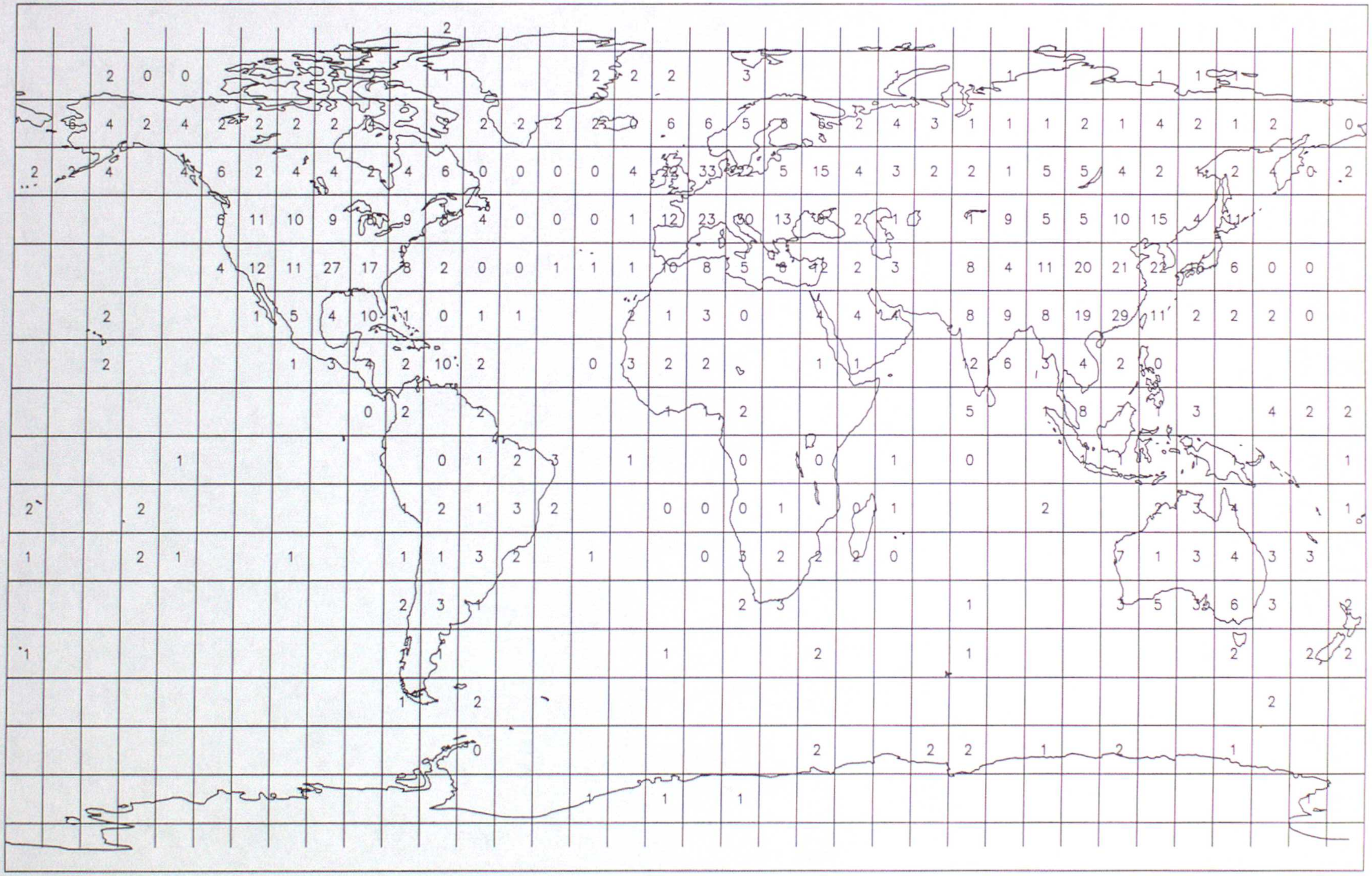


TABLE 6

MONTHLY MONITORING OF RADIOSONDE OBSERVATIONS
MONITORING CENTRE: BRACKNELL
MONTH: September 2000

Monitoring procedures

Period :One calendar month.

Data monitored :Reports from each unique identifier for radiosonde TEMPs.

Area monitored :90°N - 90°S, 180°W - 180°E.

Standard of comparison :Background field from UKMO global model.

Observation times :00 UTC and 12 UTC.

Level(s) monitored :Standard levels between 1000.0 - 100.0 hPa

Element monitored :VECTOR WIND in m s^{-1}

Parameters monitored

:NUM OBS :Number of observations available at level shown during period.

:NUM GROSS :Number of gross errors at level shown during period.

:% REJ :Percentage of observations rejected by quality control at level shown during period excluding those with gross errors.

:UBIAS,VBIAS :Mean difference of observations of U and V components from background values at level shown excluding those with gross errors.

:RMS :Root Mean Square difference of observations from background values at level shown excluding those with gross errors.

:NUM LEVELS :Number of levels satisfying selection criteria.

GROSS ERROR LIMITS :Defined in Appendix I.2

SELECTION CRITERIA : ≥ 10 observations and ≥ 15 m s^{-1} RMS vector wind.

ONLY THE STANDARD LEVEL BETWEEN 1000 - 100 hPa WITH HIGHEST RMS IS SHOWN

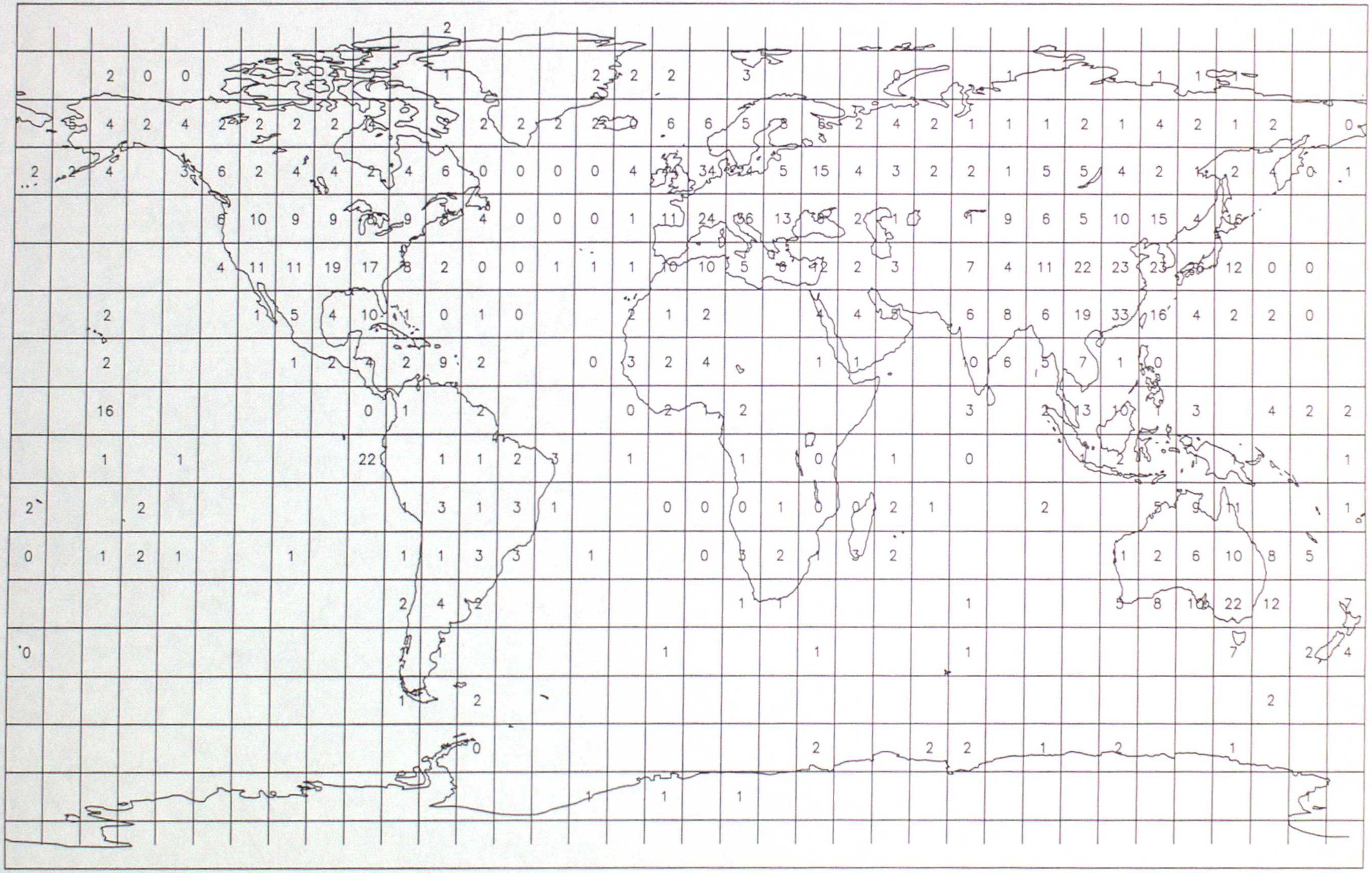
WMO IDENT	OBS TIME	ELM	LEV	LAT/LONG	NUM OBS	NUM GROSS	% REJ	UBIAS	VBIAS	RMS	LEVELS
PSPIU	00	V	100	-5/ -81	29	0	100	-0.2	1.2	23.0	1
PSPIU	12	V	100	-5/ -81	29	0	100	3.1	0.6	23.5	1
48568	12	V	150	7/ 101	11	0	72	16.9	13.2	23.7	1
72520	00	V	250	40/ 80	23	0	65	-6.0	-2.2	23.4	2
72520	12	V	200	40/ 80	26	0	73	-11.5	-3.2	23.2	4
78397	00	V	300	18/ -77	12	0	8	-4.2	5.0	18.2	1

AVAILABILITY – TEMP/PILOT – 300 HPA WIND – SEPTEMBER 2000 FIGURE 9

ALL HOURS

10 DEGREE BOX AVERAGE NUMBER OF OBSERVATIONS IN 24 HOURS

GLOBAL AVERAGE NUMBER OF OBSERVATIONS IN 24 HOURS – 1316


2
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5 4 2 4 2 2 2 2 2 2 2 2 6 6 5 8 6 2 4 2 1 1 1 2 1 4 2 1 2 0
2 2 4 3 6 2 4 4 2 4 6 0 0 0 0 4 34 4 5 15 4 3 2 2 1 5 5 4 2 1 2 4 0 1
8 10 9 9 9 8 4 0 0 0 1 11 24 36 13 8 2 1 1 9 6 5 10 15 4 16
4 11 11 19 17 8 2 0 0 1 1 1 10 10 5 8 42 2 3 7 4 11 22 23 23 12 0 0
2 1 5 4 10 1 0 1 0 2 1 2 4 4 8 6 8 6 19 33 16 4 2 2 0
2 1 2 4 2 9 2 0 3 2 4 1 1 10 6 5 7 1 0
16 0 1 2 0 2 2 3 2 13 10 1 3 4 2 2
1 1 22 1 1 2 3 1 1 0 1 0 2 1
2 2 1 3 1 3 1 0 0 0 1 0 0 2 1 2 5 9 1 1 1
0 1 2 1 1 1 1 3 3 1 0 3 2 1 3 2 1 2 6 10 8 5
2 4 2 1 1 1 5 8 10 22 12 7
0 1 1 1 1 7 2 4
1 2 2
0 2 2 2 1 2 1
1 1 1

TABLE 7

MONTHLY MONITORING OF RADIOSONDE OBSERVATIONS
MONITORING CENTRE: BRACKNELL
MONTH: September 2000

Monitoring procedures

Period		:One calendar month.
Data monitored		:Reports from each unique identifier for radiosonde TEMPs.
Area monitored		:90°N - 90°S, 180°W - 180°E.
Standard of comparison		:Background field from UKMO global model.
Observation times		:00 UTC and 12 UTC.
Level(s) monitored		:Standard levels between 500.0 - 150.0 hPa
Element monitored		:WIND DIRECTION in degrees
Parameters monitored		
	:NUM OBS	:Average number of observations at all levels.
	:BIAS	:Mean difference of observations from background values from all levels.
	:MAX SPREAD	:(For observation - background values) Maximum absolute difference of SD at any level from SD at all levels
	:SD	:SD of difference of observations from background values at all levels.

SELECTION CRITERIA

:NUM OBS ≥ 5, and
ABSOLUTE BIAS ≥ 10°, with
SD < 30°, and
MAX SPREAD < 10°

WMO IDENT	OBS TIME	ELM	LAT/LONG	NUM OBS	BIAS	MAX SPREAD	SD
17280	12	DD	38/ 40	9	-10.8	5.3	8.3
29612	12	DD	55/ 78	25	23.2	3.2	9.1
33791	12	DD	48/ 33	18	-12.2	3.9	16.6
43333	00	DD	12/ 93	15	10.4	6.4	18.0
56571	12	DD	28/ 102	21	11.2	6.1	18.5
57957	12	DD	25/ 110	16	10.4	4.5	21.0
59134	12	DD	24/ 118	21	10.2	7.7	16.5
60656	12	DD	28/ -8	16	13.2	9.1	20.3
62337	12	DD	31/ 34	26	-20.6	3.7	8.3
78866	00	DD	18/ -63	14	-10.7	8.7	25.2

MONITORING OF SATELLITE WINDS

MONITORING CENTRE: BRACKNELL

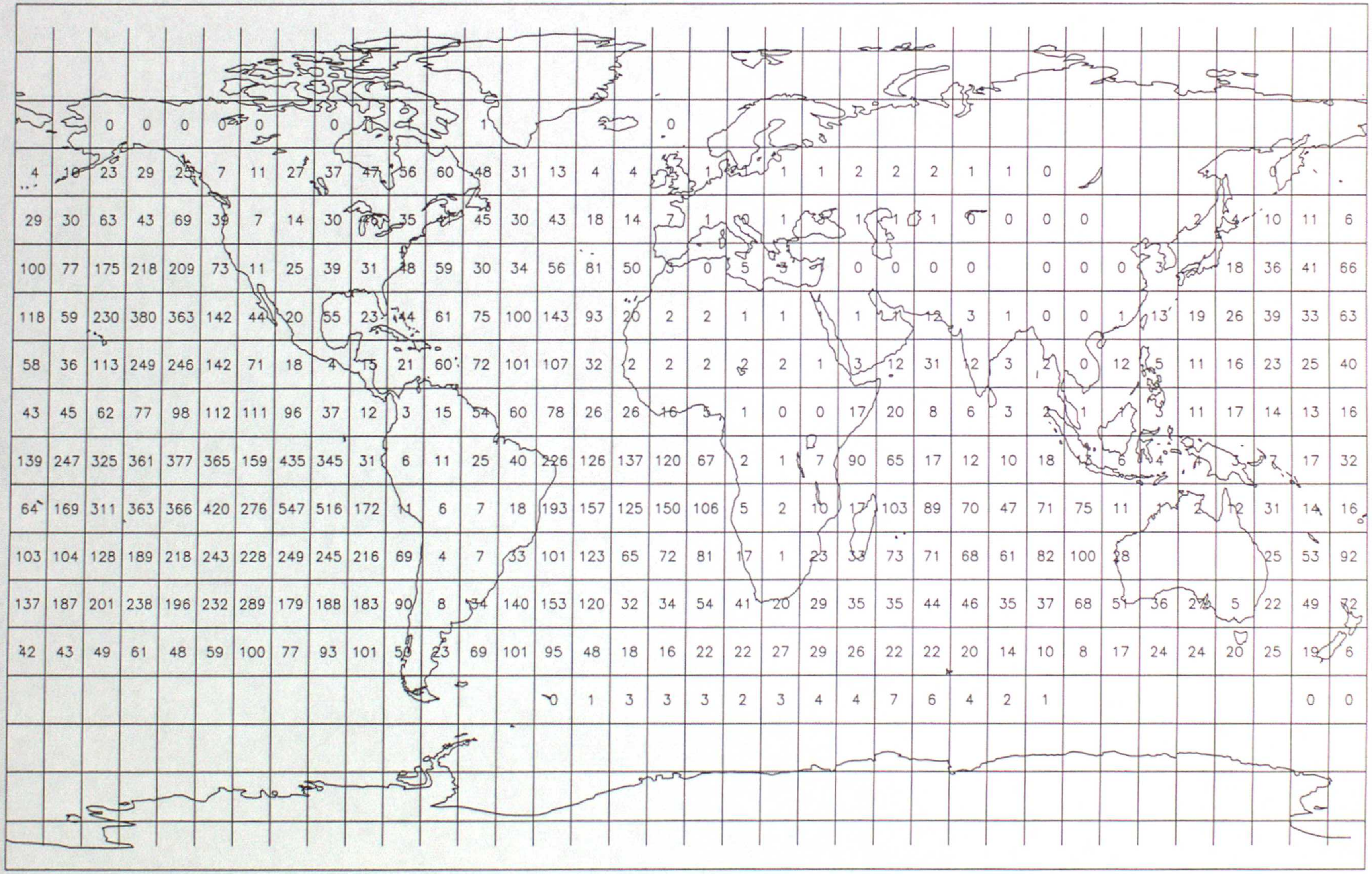
MONTH: September 2000

Monitoring procedures

Period	:One calendar month.
Data monitored	:Reports from GOES-8, GOES-10, METEOSAT-5, METEOSAT-7, GMS-5, INSAT.
Standard of comparison	:Background field from UKMO global model.
Selection Criteria	:number of observations > 10.
Data Extracted	:Layer 701 - 1000 hPa 401 - 700 hPa 101 - 400 hPa :Mean wind :Mean observation minus background vector wind differences :Mean observation minus background speed differences :RMS of observation minus background vector differences

AVERAGE DAILY NUMBER OF SATOB OBSERVATIONS BETWEEN 701 AND 1000 HPA FIGURE 10
SEPTEMBER 2000

GLOBAL AVERAGE NUMBER OF OBSERVATIONS IN 24 HOURS = 23894

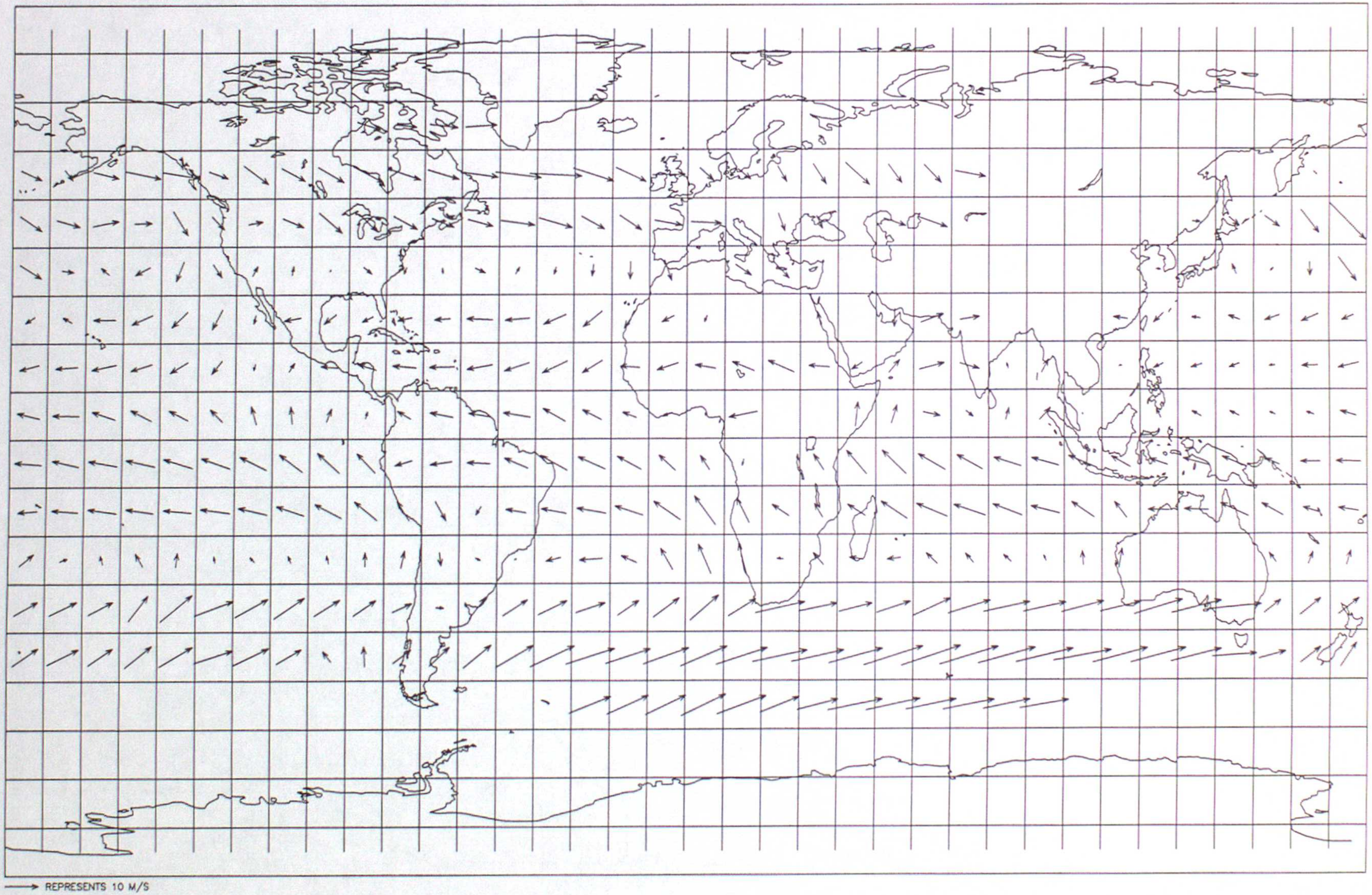


		0	0	0	0	0		0				1					0																		
4	10	23	29	25	7	11	27	37	47	56	60	48	31	13	4	4	2	1	1	1	1	2	2	2	1	1	0						0		
29	30	63	43	69	39	7	14	30	46	35	41	45	30	43	18	14	7	1	0	1	3	1	1	1	0	0	0	0			2	4	10	11	6
100	77	175	218	209	73	11	25	39	31	48	59	30	34	56	81	50	3	0	5	3	7	0	0	0	0		0	0	0	3		18	36	41	66
118	59	230	380	363	142	44	20	55	23	44	61	75	100	143	93	20	2	2	1	1	1	1	11	12	3	1	0	0	1	13	19	26	39	33	63
58	36	113	249	246	142	71	18	4	15	21	60	72	101	107	32	2	2	2	2	2	1	3	12	31	12	3	2	0	12	5	11	16	23	25	40
43	45	62	77	98	112	111	96	37	12	3	15	54	60	78	26	26	16	5	1	0	0	17	20	8	6	3	2	1	1	3	11	17	14	13	16
139	247	325	361	377	365	159	435	345	31	6	11	25	40	226	126	137	120	67	2	1	7	90	65	17	12	10	18	13	6	4	4	3	7	17	32
64	169	311	363	366	420	276	547	516	172	11	6	7	18	193	157	125	150	106	5	2	10	17	103	89	70	47	71	75	11	1	2	12	31	14	16
103	104	128	189	218	243	228	249	245	216	69	4	7	33	101	123	65	72	81	17	1	23	33	73	71	68	61	82	100	28				25	53	92
137	187	201	238	196	232	289	179	188	183	90	8	34	140	153	120	32	34	54	41	20	29	35	35	44	46	35	37	68	51	36	27	5	22	49	72
42	43	49	61	48	59	100	77	93	101	50	23	69	101	95	48	18	16	22	22	27	29	26	22	22	20	14	10	8	17	24	24	20	25	19	6
														0	1	3	3	3	2	3	4	4	7	6	4	2	1							0	0

SATOB METEOSAT W/V VECTOR MEAN WINDS BETWEEN 701–1000 HPA

FIGURE 11

SEPTEMBER 2000
ALL OBSERVATIONS
ARROWS PLOTTED WHERE MORE THAN 10 OBS ARE PRESENT


REPRESENTS 10 M/S

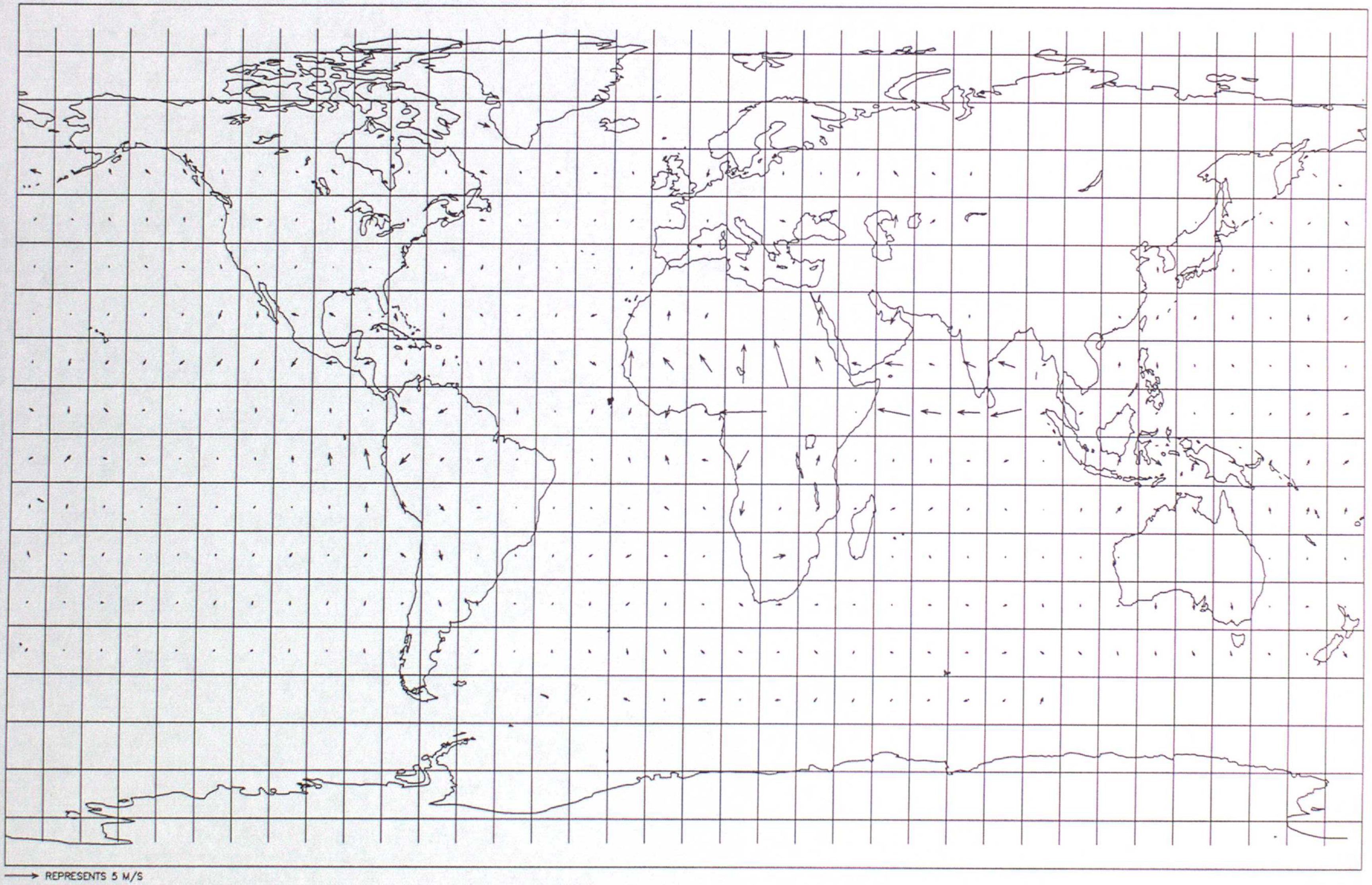
SATOB O-B VECTOR WIND DIFFERENCES BETWEEN 701-1000 HPA

SEPTEMBER 2000

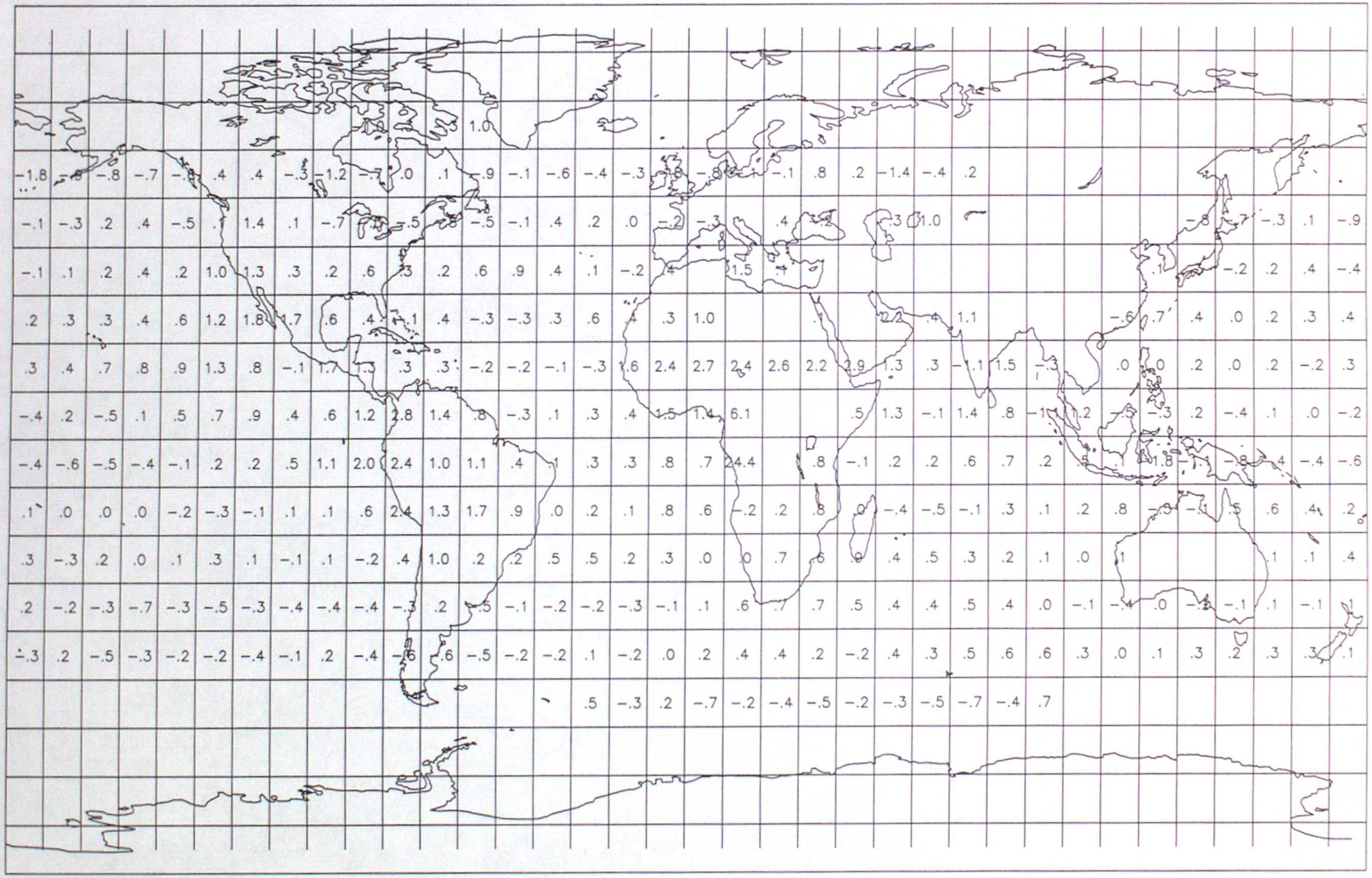
ALL OBSERVATIONS

ARROWS PLOTTED WHERE MORE THAN 10 OBS ARE PRESENT

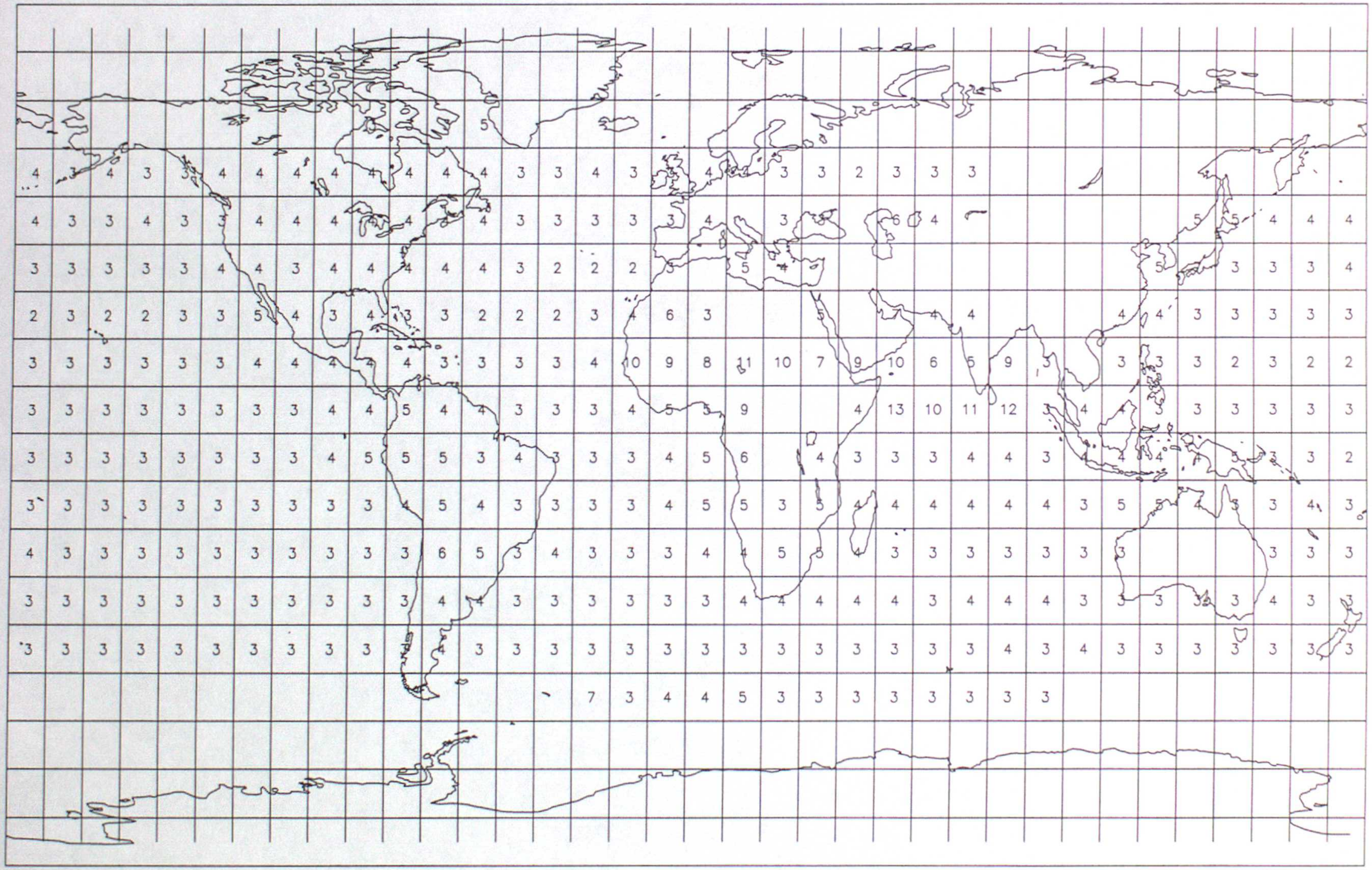
FIGURE 12



SATOBS : MEAN O-B SPEED DIFFERENCES (M/S) BETWEEN 701 AND 1000 HPA FIGURE 13
SEPTEMBER 2000
USING ALL OBSERVATIONS
VALUES ARE PRINTED WHERE MORE THAN 10 OBS ARE PRESENT


1.0
-1.8 -.8 -.8 -.7 -.8 .4 .4 -.3 -1.2 -.7 .0 .1 -.9 -.1 -.6 -.4 -.3 -.8 -.8 -.1 -.1 .8 .2 -1.4 -.4 .2
-.1 -.3 .2 .4 -.5 .1 1.4 .1 -.7 .5 -.5 .8 -.5 -.1 .4 .2 .0 -.2 -.3 .4 .2 -.3 1.0 -.8 -.7 -.3 .1 -.9
-.1 .1 .2 .4 .2 1.0 1.3 .3 .2 .6 .3 .2 .6 .9 .4 .1 -.2 .4 1.5 .4 .1 -.2 .2 .4 -.4
.2 .3 .3 .4 .6 1.2 1.8 1.7 .6 .4 -.1 .4 -.3 -.3 .3 .6 .4 .3 1.0 .1 2.2 .4 1.1 -.6 .7 .4 .0 .2 .3 .4
.3 .4 .7 .8 .9 1.3 .8 -.1 1.7 1.3 .3 .3 -.2 -.2 -.1 -.3 1.6 2.4 2.7 2.4 2.6 2.2 2.9 1.3 .3 -1.1 1.5 -.3 .0 .0 .2 .0 .2 -.2 .3
-.4 .2 -.5 .1 .5 .7 .9 .4 .6 1.2 2.8 1.4 .8 -.3 .1 .3 .4 1.5 1.4 6.1 .5 1.3 -.1 1.4 .8 -1.1 1.2 -.5 -.3 .2 -.4 .1 .0 -.2
-.4 -.6 -.5 -.4 -.1 .2 .2 .5 1.1 2.0 2.4 1.0 1.1 .4 .1 .3 .3 .8 .7 24.4 .8 -.1 .2 .2 .6 .7 .2 .5 .1 1.8 -1.1 -.8 .4 -.4 -.6
.1 .0 .0 .0 -.2 -.3 -.1 .1 .1 .6 2.4 1.3 1.7 .9 .0 .2 .1 .8 .6 -.2 .2 .8 .0 -.4 -.5 -.1 .3 .1 .2 .8 -.5 -.1 .5 .6 .4 .2
.3 -.3 .2 .0 .1 .3 .1 -.1 .1 -.2 .4 1.0 .2 .2 .5 .5 .2 .3 .0 .0 .7 .6 .0 .4 .5 .3 .2 .1 .0 .1 .1 .1 .4
.2 -.2 -.3 -.7 -.3 -.5 -.3 -.4 -.4 -.4 -.3 .2 -.5 -.1 -.2 -.2 -.3 -.1 .1 .6 .7 .7 .5 .4 .4 .5 .4 .0 -.1 -.4 .0 -.3 -.1 .1 -.1 .1
-.3 .2 -.5 -.3 -.2 -.2 -.4 -.1 .2 -.4 -.6 .6 -.5 -.2 -.2 .1 -.2 .0 .2 .4 .4 .2 -.2 .4 .3 .5 .6 .6 .3 .0 .1 .3 .2 .3 .3 .1
.5 -.3 .2 -.7 -.2 -.4 -.5 -.2 -.3 -.5 -.7 -.4 .7

SATOBS : RMS O–B VECTOR DIFFERENCES (M/S) BETWEEN 701 AND 1000 HPA FIGURE 14
SEPTEMBER 2000
USING ALL OBSERVATIONS
VALUES ARE PRINTED WHERE MORE THAN 10 OBS ARE PRESENT



												5																							
4	3	4	3	3	4	4	4	4	4	4	4	4	3	3	4	3	3	4	4	3	3	2	3	3	3										
4	3	3	4	3	3	4	4	4	4	4		4	3	3	3	3	3	4		3	3		6	4							5	5	4	4	4
3	3	3	3	3	4	4	3	4	4	4	4	4	3	2	2	2	3		5	4										5		3	3	3	4
2	3	2	2	3	3	5	4	3	4	3	3	2	2	2	3	4	6	3			5		7	4	4				4	4	3	3	3	3	3
3	3	3	3	3	3	4	4	4	4	4	3	3	3	3	4	10	9	8	11	10	7	9	10	6	5	9	3		3	3	3	2	3	2	2
3	3	3	3	3	3	3	3	4	4	5	4	4	3	3	3	4	5	5	9			4	13	10	11	12	3	4	4	3	3	3	3	3	3
3	3	3	3	3	3	3	3	4	5	5	5	3	4	3	3	3	4	5	6		4	3	3	3	4	4	3	4	4	4	4	5	3	3	2
3	3	3	3	3	3	3	3	3	3	4	5	4	3	3	3	3	4	5	5	3	5	4	4	4	4	4	4	3	5	5	4	3	3	4	3
4	3	3	3	3	3	3	3	3	3	3	6	5	3	4	3	3	3	4	4	5	5	4	3	3	3	3	3	3	3				3	3	3
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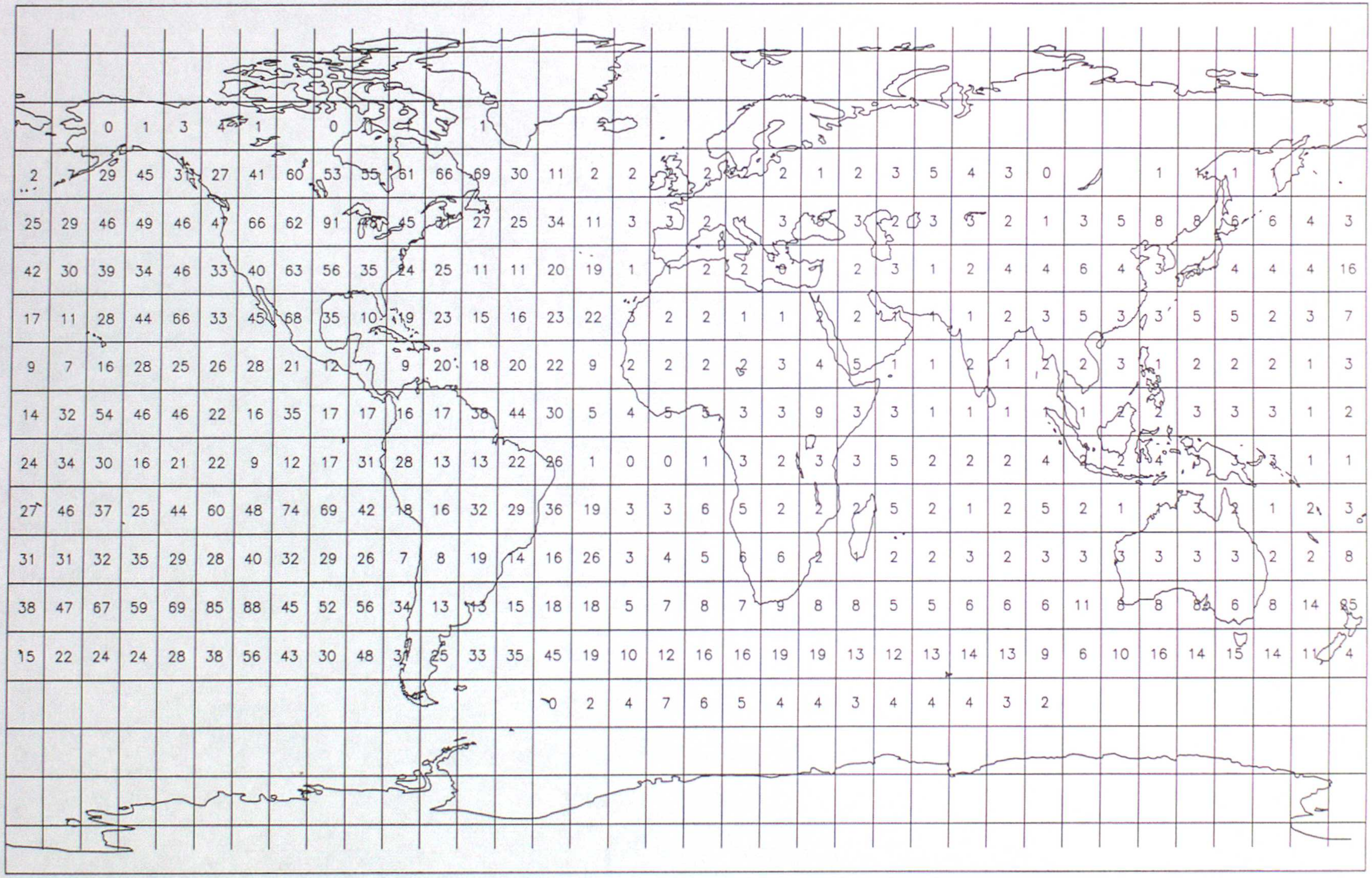
															7	3	4	4	5	3	3	3	3	3	3	3	3								

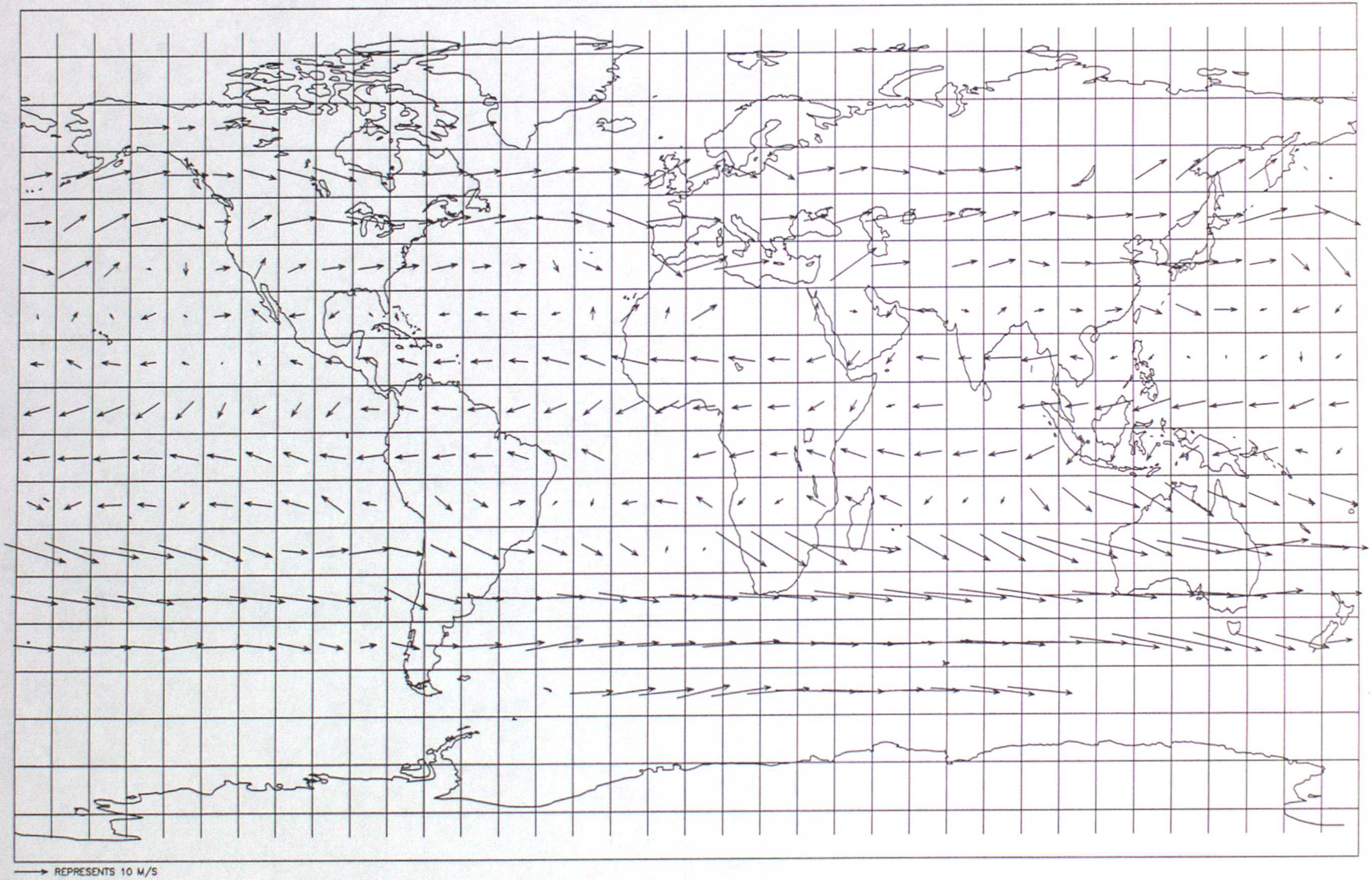
AVERAGE DAILY NUMBER OF SATOB OBSERVATIONS BETWEEN 401 AND 700 HPA FIGURE 15
SEPTEMBER 2000

GLOBAL AVERAGE NUMBER OF OBSERVATIONS IN 24 HOURS = 6559


0 1 3 4 1 0 1 1
2 7 29 45 31 27 41 60 53 55 61 66 69 30 11 2 2 2 2 2 2 1 2 3 5 4 3 0 1 1 1 1
25 29 46 49 46 47 66 62 91 48 45 31 27 25 34 11 3 3 2 4 3 5 3 2 3 5 2 1 3 5 8 8 6 6 4 3
42 30 39 34 46 33 40 63 56 35 24 25 11 11 20 19 1 1 2 2 0 1 2 3 1 2 4 4 6 4 3 4 4 4 16
17 11 28 44 66 33 45 68 35 10 19 23 15 16 23 22 3 2 2 1 1 2 2 1 1 1 2 3 5 3 3 5 5 2 3 7
9 7 16 28 25 26 28 21 12 7 9 20 18 20 22 9 2 2 2 3 4 5 1 1 2 1 2 2 3 1 2 2 2 1 3
14 32 54 46 46 22 16 35 17 17 16 17 38 44 30 5 4 5 5 3 3 9 3 3 1 1 1 1 1 2 2 3 3 3 1 2
24 34 30 16 21 22 9 12 17 31 28 13 13 22 26 1 0 0 1 3 2 3 3 5 2 2 2 4 2 2 4 3 3 3 1 1
27 46 37 25 44 60 48 74 69 42 18 16 32 29 36 19 3 3 6 5 2 2 2 5 2 1 2 5 2 1 1 3 2 1 2 3
31 31 32 35 29 28 40 32 29 26 7 8 19 14 16 26 3 4 5 6 6 2 1 2 2 3 2 3 3 3 3 3 3 2 2 8
38 47 67 59 69 85 88 45 52 56 34 13 13 15 18 18 5 7 8 7 8 7 9 8 8 5 5 6 6 6 11 8 8 8 6 8 14 85
15 22 24 24 28 38 56 43 30 48 31 25 33 35 45 19 10 12 16 16 19 19 13 12 13 14 13 9 6 10 16 14 15 14 11 4
0 2 4 7 6 5 4 4 3 4 4 4 3 2

SATOB VECTOR MEAN WINDS BETWEEN 401–700 HPA
SEPTEMBER 2000
ALL OBSERVATIONS
ARROWS PLOTTED WHERE MORE THAN 10 OBS ARE PRESENT

FIGURE 16


REPRESENTS 10 M/S

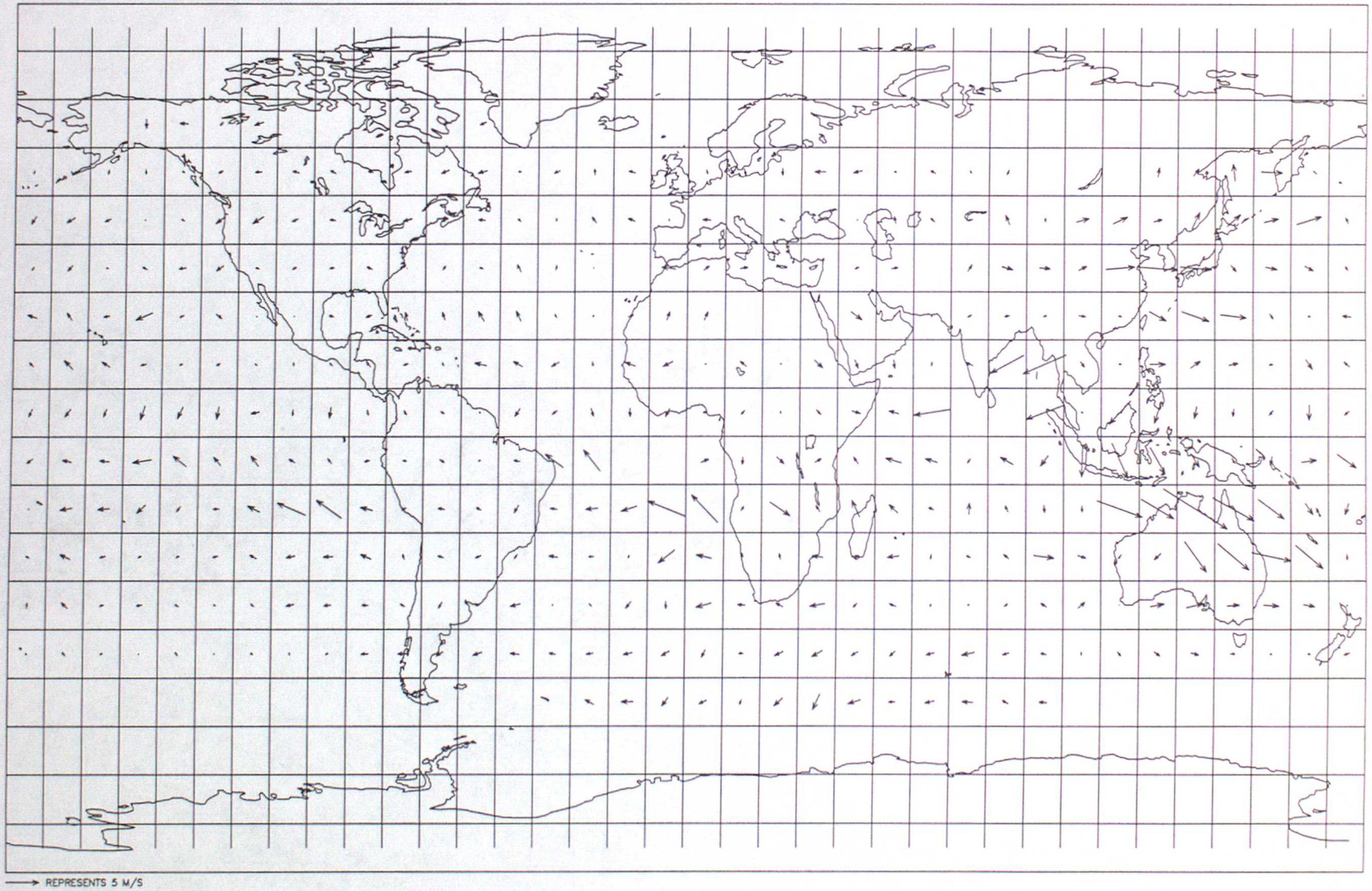
SATOB O–B VECTOR WIND DIFFERENCES BETWEEN 401–700 HPA

FIGURE 17

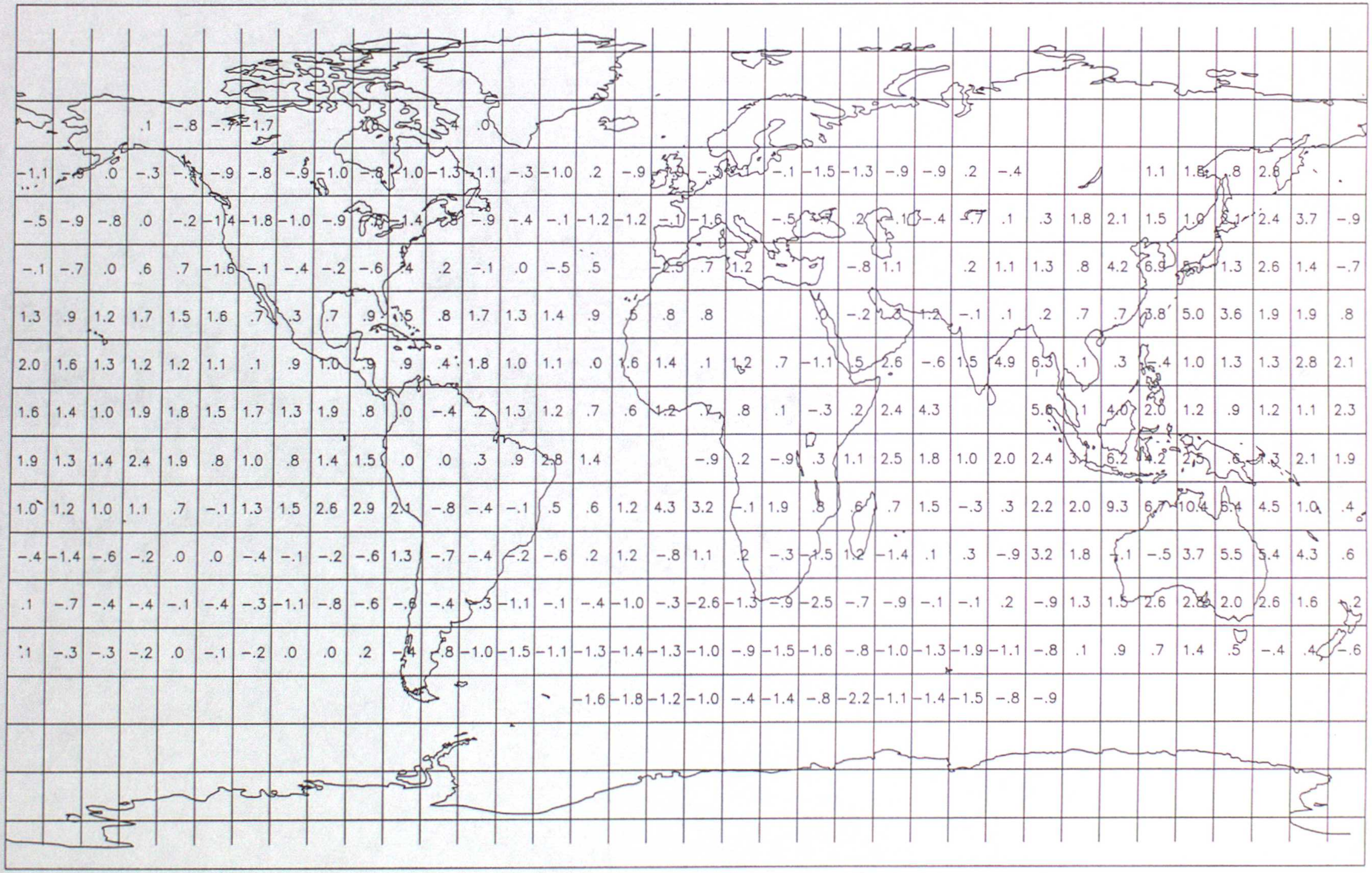
SEPTEMBER 2000

ALL OBSERVATIONS

ARROWS PLOTTED WHERE MORE THAN 10 OBS ARE PRESENT

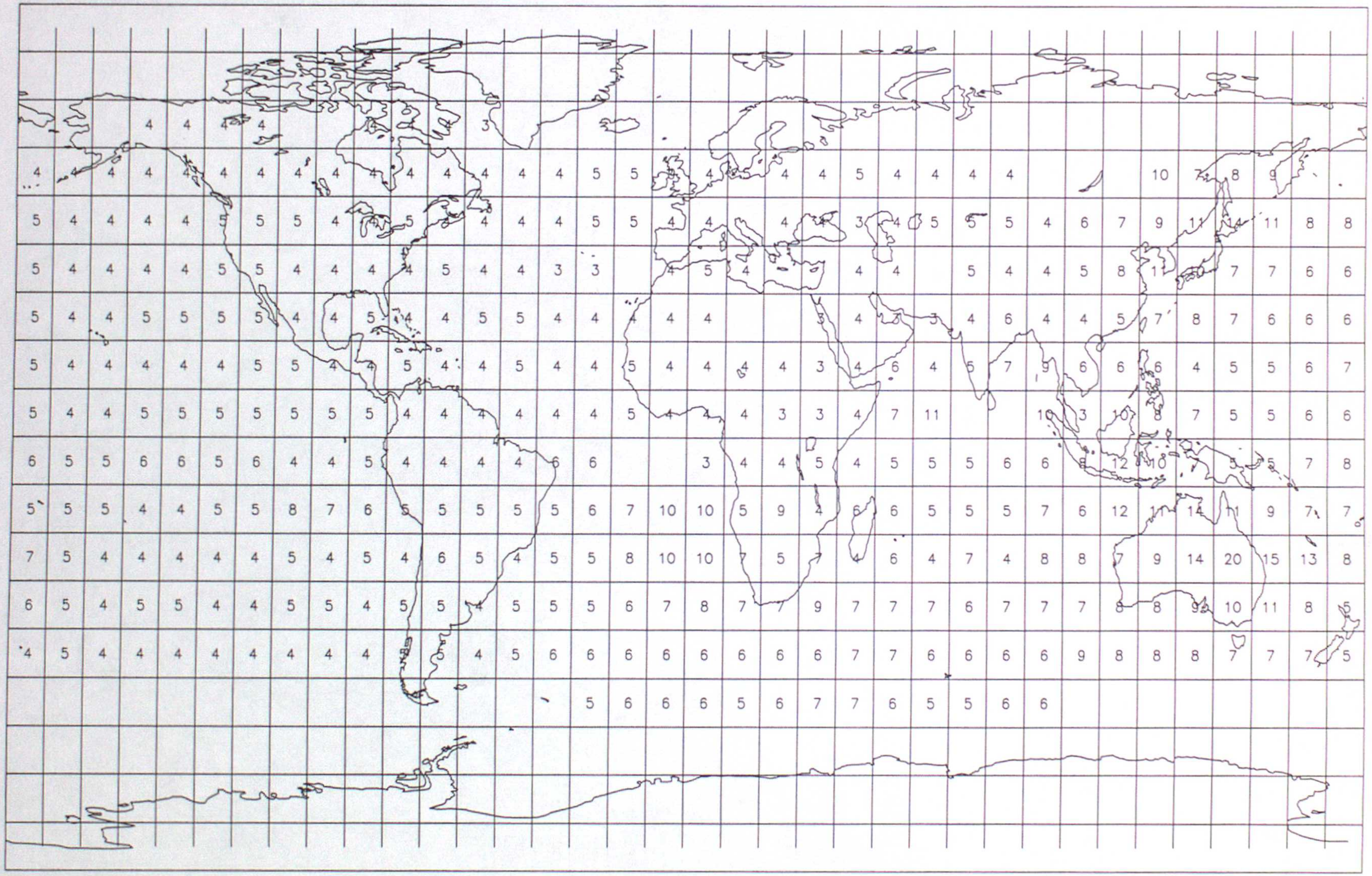


SATOBS : MEAN O–B SPEED DIFFERENCES (M/S) BETWEEN 401 AND 700 HPA FIGURE 18
SEPTEMBER 2000
USING ALL OBSERVATIONS
VALUES ARE PRINTED WHERE MORE THAN 10 OBS ARE PRESENT



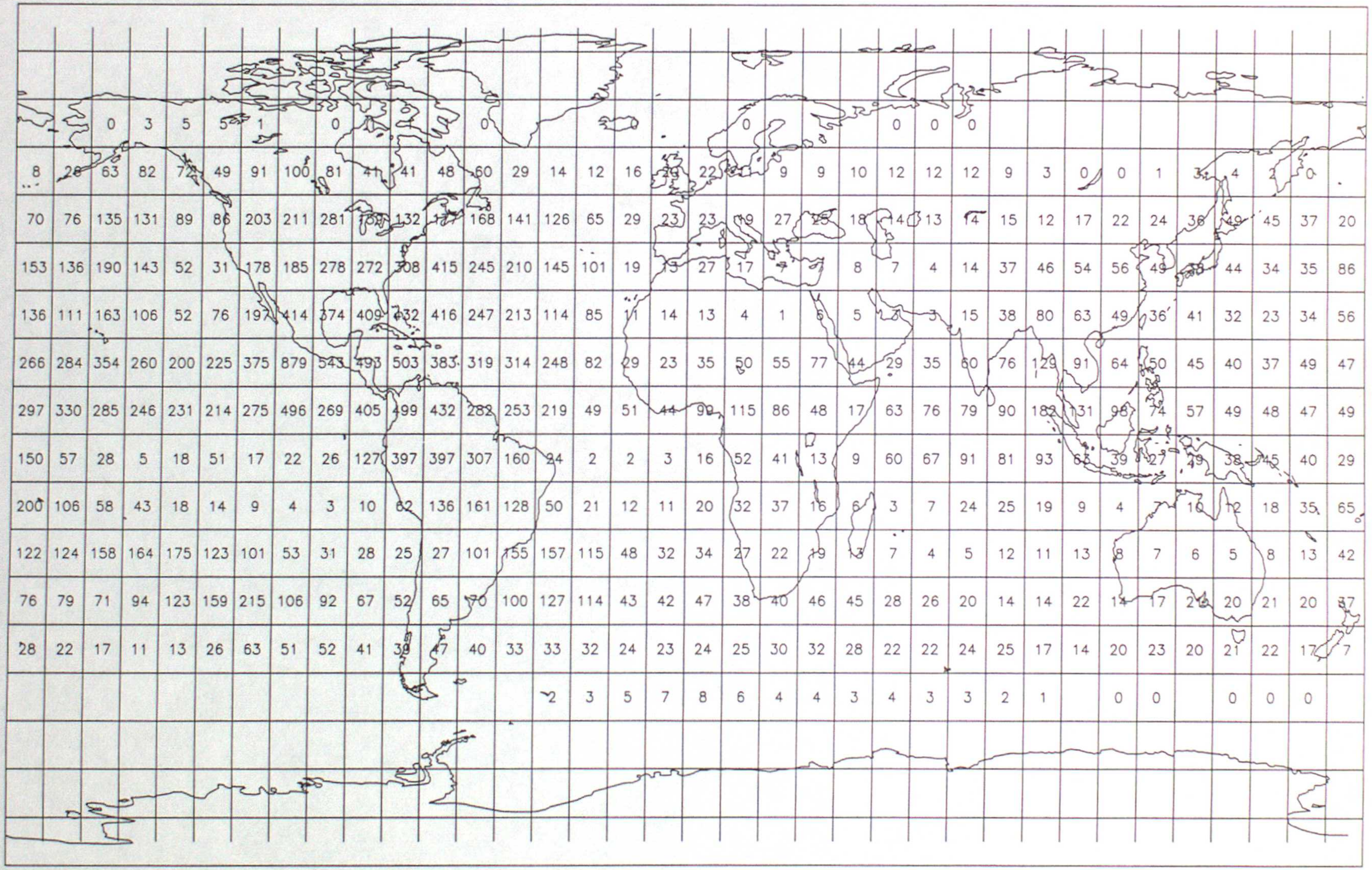
			.1	−.8	−.7	1.7			1.0	.5	.4	.0																							
−1.1	−.9	.0	−.3	−.4	−.9	−.8	−.9	−1.0	−.8	−1.0	−1.3	−1.1	−.3	−1.0	.2	−.9	−.9	−.3	.1	−.1	−1.5	−1.3	−.9	−.9	.2	−.4			1.1	1.8	.8	2.8			
−.5	−.9	−.8	.0	−.2	−1.4	−1.8	−1.0	−.9	−.8	−1.4	−.8	−.9	−.4	−.1	−1.2	−1.2	−.1	−1.6		−.5	.7	.2	−.1	−.4	−.7	.1	.3	1.8	2.1	1.5	1.0	2.1	2.4	3.7	−.9
−.1	−.7	.0	.6	.7	−1.6	−.1	−.4	−.2	−.6	.4	.2	−.1	.0	−.5	.5		−2.5	.7	1.2			−.8	1.1		.2	1.1	1.3	.8	4.2	6.9	.5	1.3	2.6	1.4	−.7
1.3	.9	1.2	1.7	1.5	1.6	.7	.3	.7	.9	.5	.8	1.7	1.3	1.4	.9	.5	.8	.8			.0	−.2	1.3	1.2	−.1	.1	.2	.7	.7	3.8	5.0	3.6	1.9	1.9	.8
2.0	1.6	1.3	1.2	1.2	1.1	.1	.9	1.0	.9	.9	.4	1.8	1.0	1.1	.0	1.6	1.4	.1	1.2	.7	−1.1	.5	2.6	−.6	1.5	4.9	6.3	.1	.3	−.4	1.0	1.3	1.3	2.8	2.1
1.6	1.4	1.0	1.9	1.8	1.5	1.7	1.3	1.9	.8	.0	−.4	.2	1.3	1.2	.7	.6	1.2	.7	.8	.1	−.3	.2	2.4	4.3			5.6	.1	4.0	2.0	1.2	.9	1.2	1.1	2.3
1.9	1.3	1.4	2.4	1.9	.8	1.0	.8	1.4	1.5	.0	.0	.3	.9	2.8	1.4			−.9	.2	−.9	.3	1.1	2.5	1.8	1.0	2.0	2.4	3.1	6.2	4.2	2.5	.6	1.3	2.1	1.9
1.0	1.2	1.0	1.1	.7	−.1	1.3	1.5	2.6	2.9	2.1	−.8	−.4	−.1	.5	.6	1.2	4.3	3.2	−.1	1.9	.8	.6	.7	1.5	−.3	.3	2.2	2.0	9.3	6.7	10.4	5.4	4.5	1.0	.4
−.4	−1.4	−.6	−.2	.0	.0	−.4	−.1	−.2	−.6	1.3	−.7	−.4	−.2	−.6	.2	1.2	−.8	1.1	.2	−.3	−1.5	1.2	−1.4	.1	.3	−.9	3.2	1.8	−.1	−.5	3.7	5.5	5.4	4.3	.6
.1	−.7	−.4	−.4	−.1	−.4	−.3	−1.1	−.8	−.6	−.6	−.4	−.3	−1.1	−.1	−.4	−1.0	−.3	−2.6	−1.3	−.9	−2.5	−.7	−.9	−.1	−.1	.2	−.9	1.3	1.5	2.6	2.8	2.0	2.6	1.6	.2
.1	−.3	−.3	−.2	.0	−.1	−.2	.0	.0	.2	−.4	−.8	−1.0	−1.5	−1.1	−1.3	−1.4	−1.3	−1.0	−.9	−1.5	−1.6	−.8	−1.0	−1.3	−1.9	−1.1	−.8	.1	.9	.7	1.4	.5	−.4	.4	−.6
															−1.6	−1.8	−1.2	−1.0	−.4	−1.4	−.8	−2.2	−1.1	−1.4	−1.5	−.8	−.9								

SATOBS : RMS O-B VECTOR DIFFERENCES (M/S) BETWEEN 401 AND 700 HPA FIGURE 19
SEPTEMBER 2000
USING ALL OBSERVATIONS
VALUES ARE PRINTED WHERE MORE THAN 10 OBS ARE PRESENT


4 4 4 4 3
4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 5 5 4 4 4 5 4 4 4 4 10 7 8 9
5 4 4 4 4 5 5 5 4 4 5 4 4 4 4 5 5 4 4 4 4 3 4 5 5 5 4 6 7 9 11 14 11 8 8
5 4 4 4 4 5 5 4 4 4 4 5 4 4 3 3 4 5 4 4 4 5 4 4 5 8 11 7 7 6 6
5 4 4 5 5 5 5 4 4 5 4 4 5 5 4 4 4 4 4 3 4 3 3 4 6 4 4 5 7 8 7 6 6 6
5 4 4 4 4 4 5 5 4 4 5 4 4 5 4 4 5 4 4 4 4 3 4 6 4 5 7 9 6 6 6 4 5 5 6 7
5 4 4 5 5 5 5 5 5 5 4 4 4 4 4 4 5 4 4 4 3 3 4 7 11 10 3 10 8 7 5 5 6 6
6 5 5 6 6 5 6 4 4 5 4 4 4 4 6 6 3 4 4 5 4 5 5 5 6 6 8 12 10 5 5 7 8
5 5 5 4 4 5 5 8 7 6 5 5 5 5 5 6 7 10 10 5 9 4 6 6 5 5 5 7 6 12 11 14 11 9 7 7
7 5 4 4 4 4 4 5 4 5 4 6 5 4 5 5 8 10 10 7 5 7 4 6 4 7 4 8 8 7 9 14 20 15 13 8
6 5 4 5 5 4 4 5 5 4 5 5 4 5 5 5 6 7 8 7 7 9 7 7 7 6 7 7 7 8 8 9 10 11 8 5
4 5 4 4 4 4 4 4 4 4 5 5 4 5 6 6 6 6 6 6 6 6 7 7 6 6 6 6 9 8 8 8 7 7 7 5
5 6 6 6 5 6 7 7 6 5 5 6 6

AVERAGE DAILY NUMBER OF SATOB OBSERVATIONS BETWEEN 101 AND 400 HPA FIGURE 20
SEPTEMBER 2000

GLOBAL AVERAGE NUMBER OF OBSERVATIONS IN 24 HOURS = 33759



		0	3	5	5	1		0				0							0				0	0	0										
8	28	63	82	72	49	91	100	81	41	41	48	60	29	14	12	16	29	22		9	9	10	12	12	12	9	3	0	0	1	3	4	2	0	
70	76	135	131	89	86	203	211	281	[illegible]	132	177	168	141	126	65	29	23	23	19	27	25	18	14	13	14	15	12	17	22	24	36	49	45	37	20
153	136	190	143	52	31	178	185	278	272	308	415	245	210	145	101	19	13	27	17	7	7	8	7	4	14	37	46	54	56	49	38	44	34	35	86
136	111	163	106	52	76	197	414	374	409	432	416	247	213	114	85	11	14	13	4	1	6	5	3	3	15	38	80	63	49	36	41	32	23	34	56
266	284	354	260	200	225	375	879	543	493	503	383	319	314	248	82	29	23	35	50	55	77	44	29	35	60	76	129	91	64	50	45	40	37	49	47
297	330	285	246	231	214	275	496	269	405	499	432	282	253	219	49	51	44	92	115	86	48	17	63	76	79	90	182	131	98	74	57	49	48	47	49
150	57	28	5	18	51	17	22	26	127	397	397	307	160	24	2	2	3	16	52	41	13	9	60	67	91	81	93	63	39	27	49	38	45	40	29
200	106	58	43	18	14	9	4	3	10	62	136	161	128	50	21	12	11	20	32	37	16	6	3	7	24	25	19	9	4	7	10	12	18	35	65
122	124	158	164	175	123	101	53	31	28	25	27	101	155	157	115	48	32	34	27	22	19	13	7	4	5	12	11	13	8	7	6	5	8	13	42
76	79	71	94	123	159	215	106	92	67	52	65	70	100	127	114	43	42	47	38	40	46	45	28	26	20	14	14	22	14	17	26	20	21	20	37
28	22	17	11	13	26	63	51	52	41	39	47	40	33	33	32	24	23	24	25	30	32	28	22	22	24	25	17	14	20	23	20	21	22	17	7
														2	3	5	7	8	6	4	4	3	4	3	3	2	1		0	0		0	0	0	

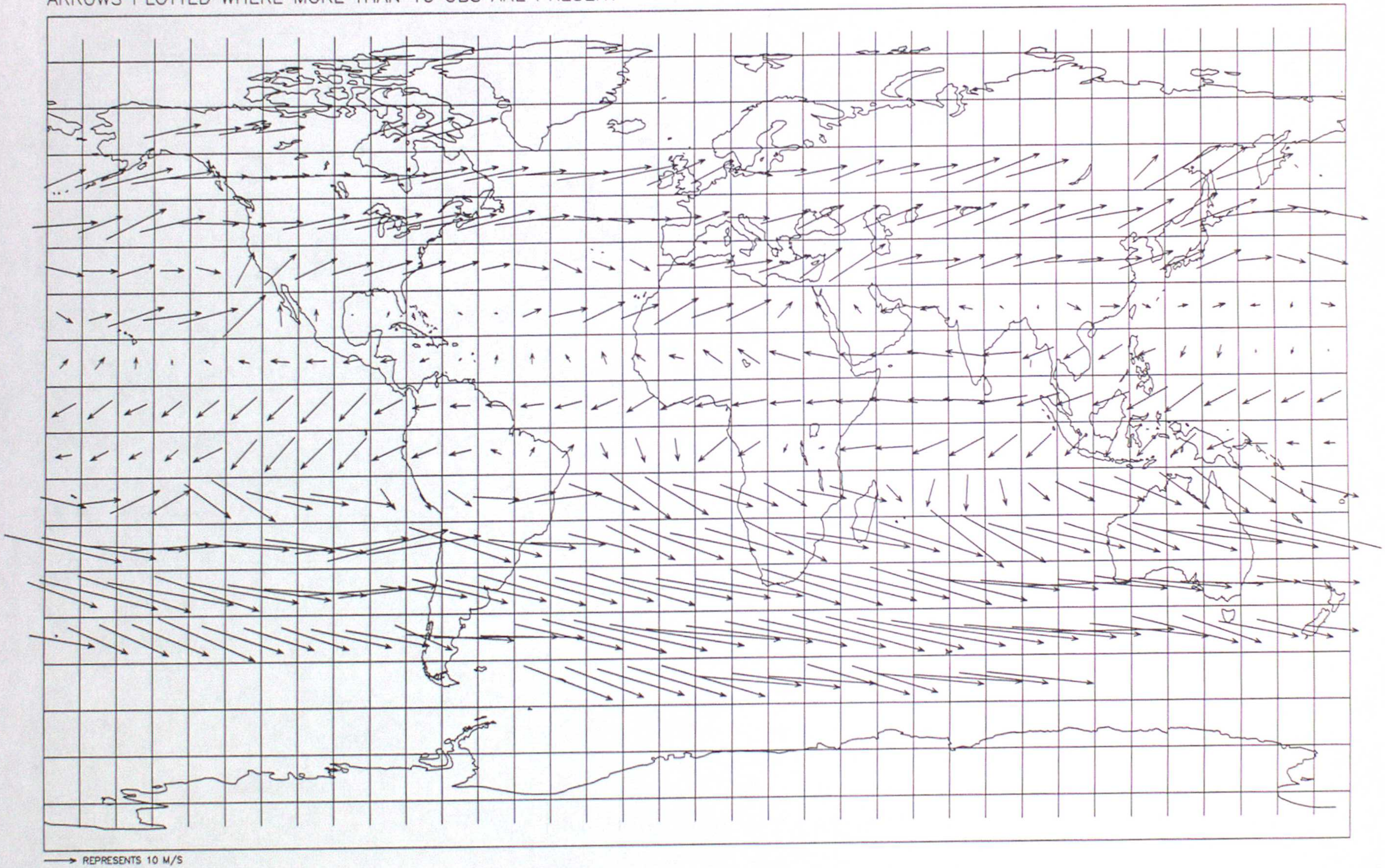
SATOB METEOSAT W/V VECTOR MEAN WINDS BETWEEN 101–400 HPA

SEPTEMBER 2000

ALL OBSERVATIONS

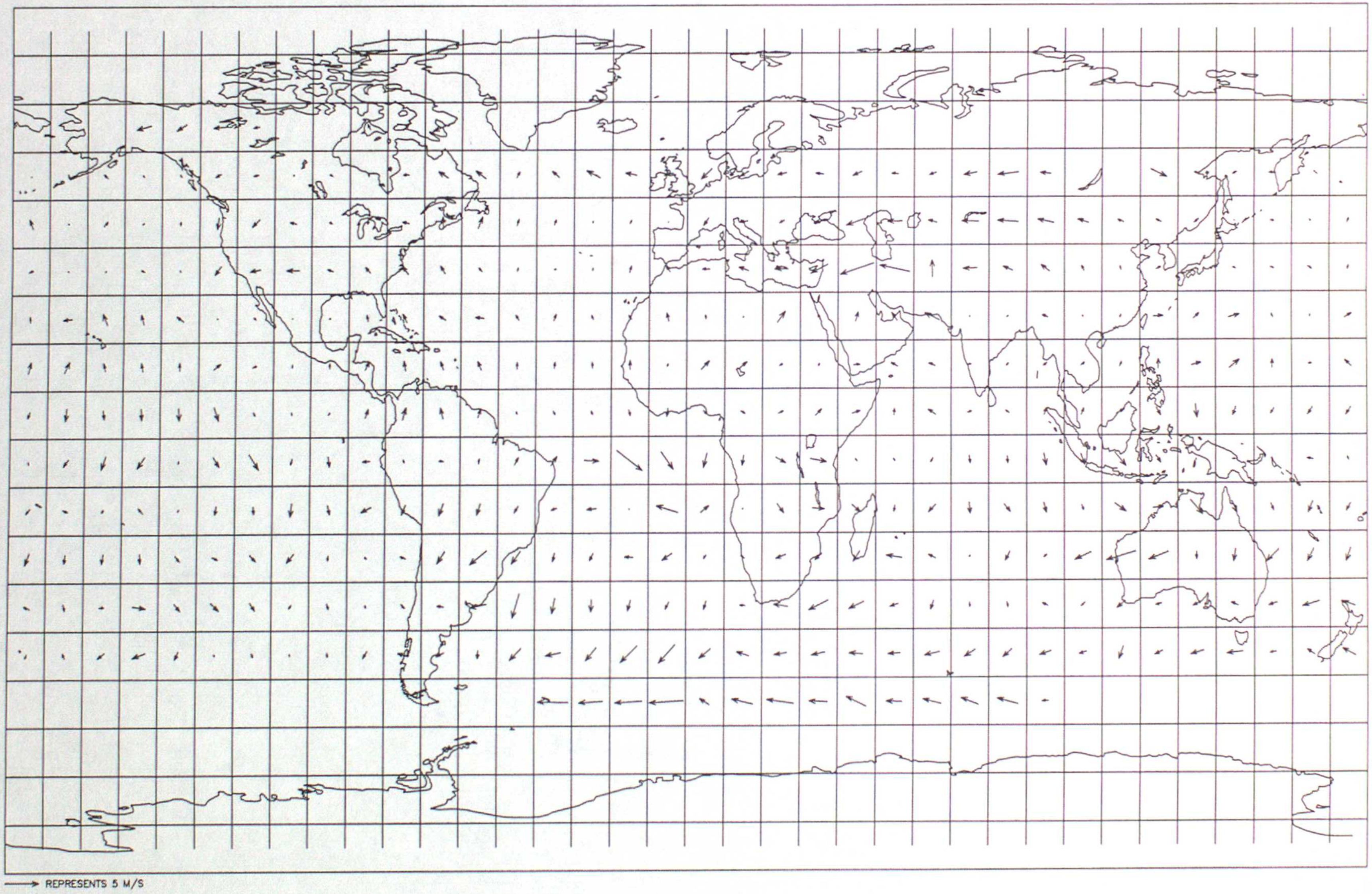
ARROWS PLOTTED WHERE MORE THAN 10 OBS ARE PRESENT

FIGURE 21

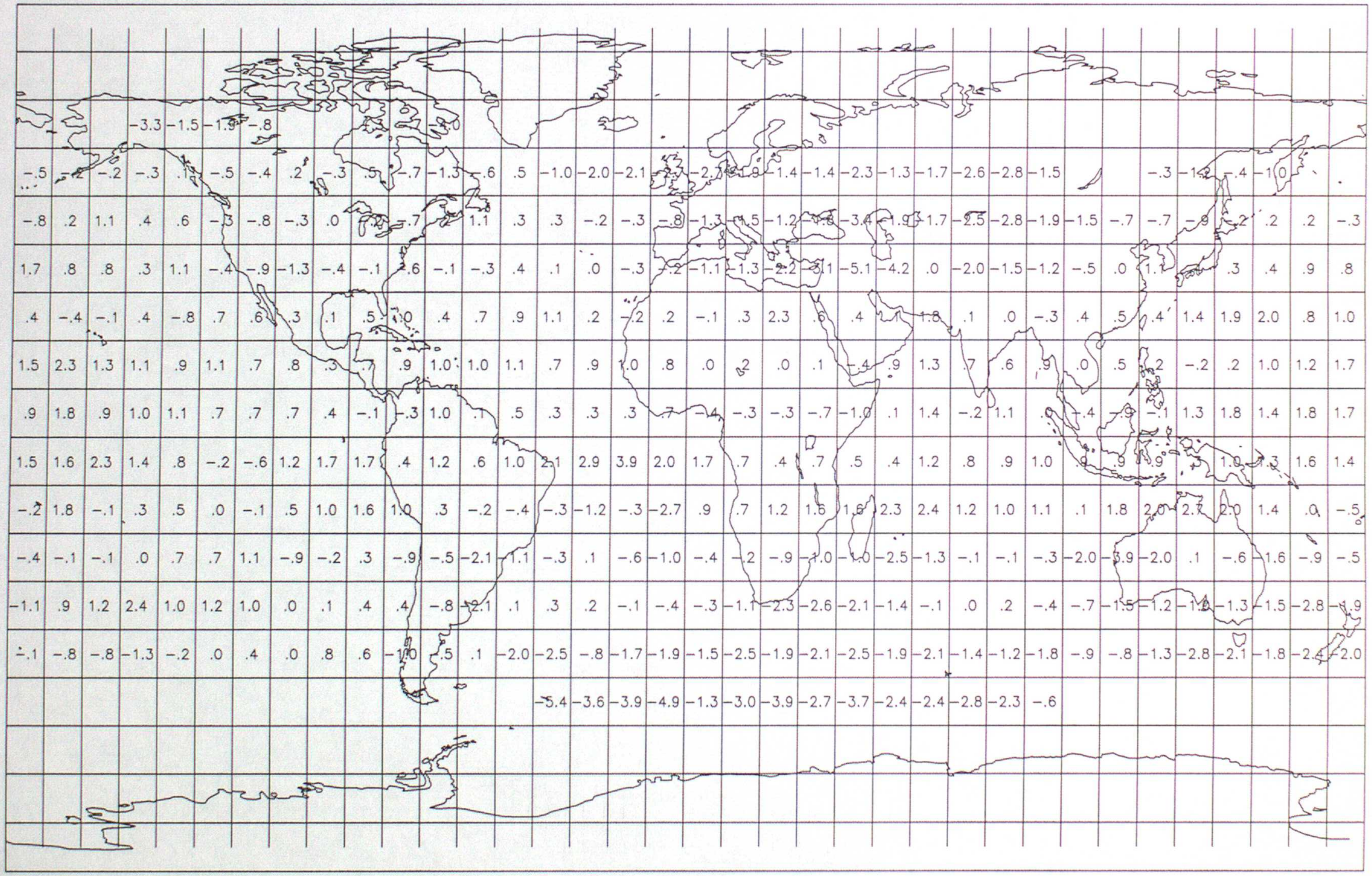

REPRESENTS 10 M/S

SATOB O-B VECTOR WIND DIFFERENCES BETWEEN 101-400 HPA
SEPTEMBER 2000
ALL OBSERVATIONS
ARROWS PLOTTED WHERE MORE THAN 10 OBS ARE PRESENT

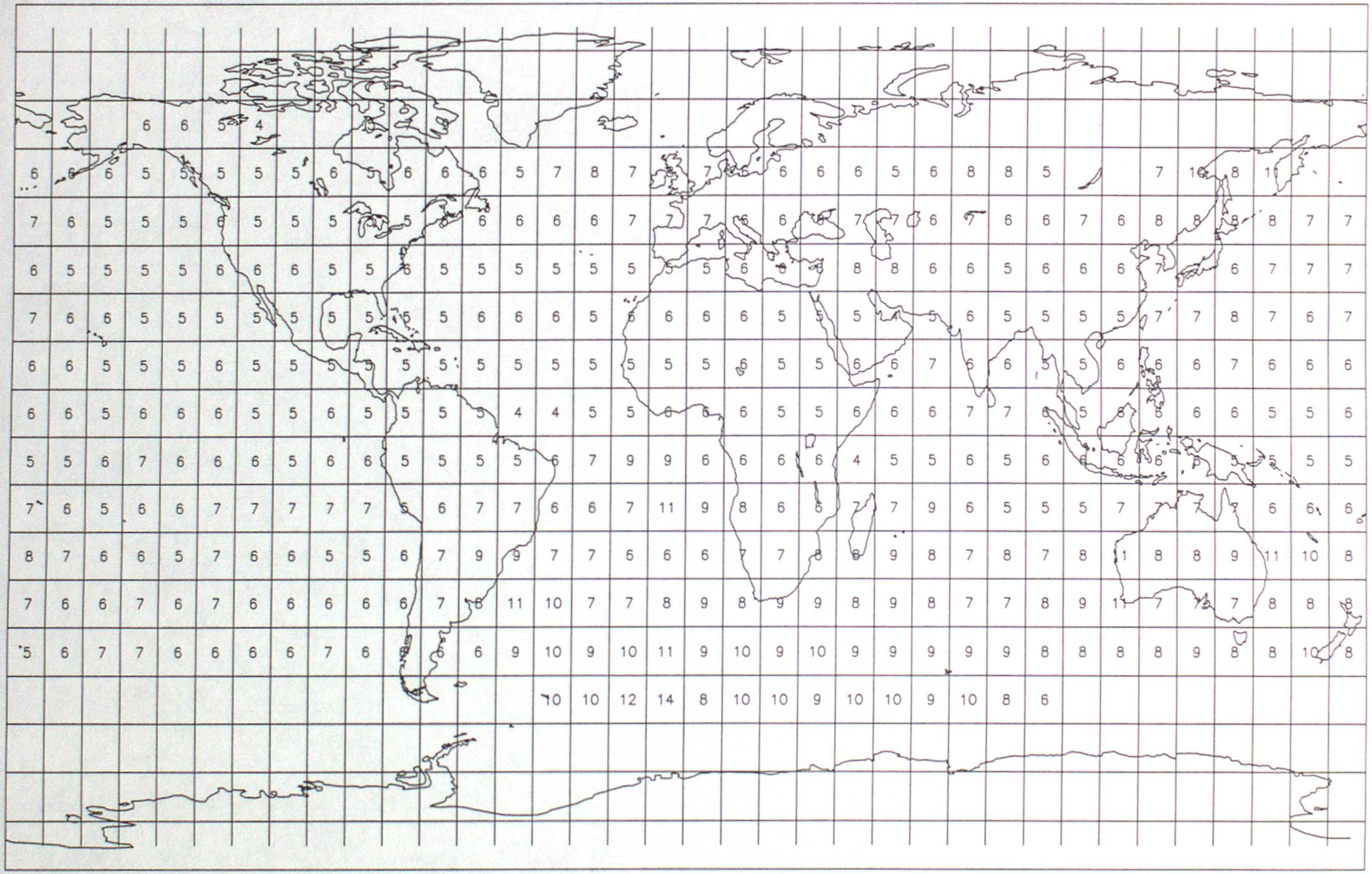
FIGURE 22



SATOBS : MEAN O–B SPEED DIFFERENCES (M/S) BETWEEN 101 AND 400 HPA FIGURE 23
SEPTEMBER 2000
USING ALL OBSERVATIONS
VALUES ARE PRINTED WHERE MORE THAN 10 OBS ARE PRESENT


-3.3 -1.5 -1.9 -.8 -1.0
-.5 -.2 -.2 -.3 .1 -.5 -.4 .2 -.3 .5 -.7 -1.3 -.6 .5 -1.0 -2.0 -2.1 -2.7 -2.7 -1.9 -1.4 -1.4 -2.3 -1.3 -1.7 -2.6 -2.8 -1.5 -.3 -1.2 -.4 -1.0
-.8 .2 1.1 .4 .6 -.3 -.8 -.3 .0 -.2 -.7 .2 1.1 .3 .3 -.2 -.3 -.8 -1.3 -1.5 -1.2 -1.8 -3.4 -1.9 -1.7 -2.5 -2.8 -1.9 -1.5 -.7 -.7 -.9 -.2 .2 .2 -.3
1.7 .8 .8 .3 1.1 -.4 -.9 -1.3 -.4 -.1 .6 -.1 -.3 .4 .1 .0 -.3 -.2 -1.1 -1.3 -2.2 -3.1 -5.1 -4.2 .0 -2.0 -1.5 -1.2 -.5 .0 1.1 .3 .4 .9 .8
.4 -.4 -.1 .4 -.8 .7 .6 .3 .1 .5 1.0 .4 .7 .9 1.1 .2 -.2 .2 -.1 .3 2.3 .6 .4 .1 1.8 .1 .0 -.3 .4 .5 .4 1.4 1.9 2.0 .8 1.0
1.5 2.3 1.3 1.1 .9 1.1 .7 .8 .3 .7 .9 1.0 1.0 1.1 .7 .9 1.0 .8 .0 .2 .0 .1 -.4 .9 1.3 .7 .6 .9 .0 .5 .2 -.2 .2 1.0 1.2 1.7
.9 1.8 .9 1.0 1.1 .7 .7 .7 .4 -.1 -.3 1.0 .1 .5 .3 .3 .3 .7 -.4 -.3 -.3 -.7 -1.0 .1 1.4 -.2 1.1 .0 -.4 -.9 -.1 1.3 1.8 1.4 1.8 1.7
1.5 1.6 2.3 1.4 .8 -.2 -.6 1.2 1.7 1.7 .4 1.2 .6 1.0 2.1 2.9 3.9 2.0 1.7 .7 .4 .7 .5 .4 1.2 .8 .9 1.0 .9 .9 .9 .3 1.0 1.3 1.6 1.4
-.2 1.8 -.1 .3 .5 .0 -.1 .5 1.0 1.6 1.0 .3 -.2 -.4 -.3 -1.2 -.3 -2.7 .9 .7 1.2 1.6 1.6 2.3 2.4 1.2 1.0 1.1 .1 1.8 2.0 2.7 2.0 1.4 .0 -.5
-.4 -.1 -.1 .0 .7 .7 1.1 -.9 -.2 .3 -.9 -.5 -2.1 1.1 -.3 .1 -.6 -1.0 -.4 .2 -.9 -1.0 -1.0 -2.5 -1.3 -.1 -.1 -.3 -2.0 -3.9 -2.0 .1 -.6 -1.6 -.9 -.5
-1.1 .9 1.2 2.4 1.0 1.2 1.0 .0 .1 .4 .4 -.8 -2.1 .1 .3 .2 -.1 -.4 -.3 -1.1 -2.3 -2.6 -2.1 -1.4 -.1 .0 .2 -.4 -.7 -1.5 -1.2 -1.0 -1.3 -1.5 -2.8 -1.9
-.1 -.8 -.8 -1.3 -.2 .0 .4 .0 .8 .6 -1.0 -.5 .1 -2.0 -2.5 -.8 -1.7 -1.9 -1.5 -2.5 -1.9 -2.1 -2.5 -1.9 -2.1 -1.4 -1.2 -1.8 -.9 -.8 -1.3 -2.8 -2.1 -1.8 -2.4 -2.0
-5.4 -3.6 -3.9 -4.9 -1.3 -3.0 -3.9 -2.7 -3.7 -2.4 -2.4 -2.8 -2.3 -.6

SATOBS : RMS O–B VECTOR DIFFERENCES (M/S) BETWEEN 101 AND 400 HPA FIGURE 24
SEPTEMBER 2000
USING ALL OBSERVATIONS
VALUES ARE PRINTED WHERE MORE THAN 10 OBS ARE PRESENT


6 6 5 4
6 6 6 5 5 5 5 5 6 5 6 6 6 5 7 8 7 8 7 6 6 6 6 5 6 8 8 5 7 10 8 11
7 6 5 5 5 6 5 5 5 5 5 6 6 6 6 6 7 7 7 6 6 8 7 7 6 7 6 6 7 6 8 8 8 8 7 7
6 5 5 5 5 6 6 6 5 5 6 5 5 5 5 5 5 5 5 6 6 6 8 8 6 6 5 6 6 6 7 6 7 7 7
7 6 6 5 5 5 5 5 5 5 5 5 6 6 6 5 6 6 6 6 5 5 5 4 5 6 5 5 5 5 7 7 8 7 6 7
6 6 5 5 5 6 5 5 5 5 5 5 5 5 5 5 5 5 5 6 5 5 6 6 7 6 6 5 5 6 6 6 7 6 6 6
6 6 5 6 6 6 5 5 6 5 5 5 5 4 4 5 5 6 6 6 5 5 6 6 6 7 7 6 5 6 6 6 6 5 5 6
5 5 6 7 6 6 6 5 6 6 5 5 5 5 6 7 9 9 6 6 6 6 4 5 5 6 5 6 6 6 6 5 5 5 5 5
7 6 5 6 6 7 7 7 7 7 5 6 7 7 6 6 7 11 9 8 6 6 7 7 9 6 5 5 5 7 7 7 7 6 6 6
8 7 6 6 5 7 6 6 5 5 6 7 9 9 7 7 6 6 6 7 7 8 8 9 8 7 8 7 8 11 8 8 9 11 10 8
7 6 6 7 6 7 6 6 6 6 6 7 8 11 10 7 7 8 9 8 9 9 8 9 8 7 7 8 9 11 7 7 7 8 8 8
5 6 7 7 6 6 6 6 7 6 6 6 6 9 10 9 10 11 9 10 9 10 9 9 9 9 9 8 8 8 8 9 8 8 10 8
10 10 12 14 8 10 10 9 10 10 9 10 8 6

MONITORING OF SATELLITE TEMPERATURES

MONITORING CENTRE: BRACKNELL

MONTH: September 2000

Monitoring procedures

Period :One calendar month.

Data monitored :Reports from NOAA-15.

Standard of comparison :Background field from UKMO global model.

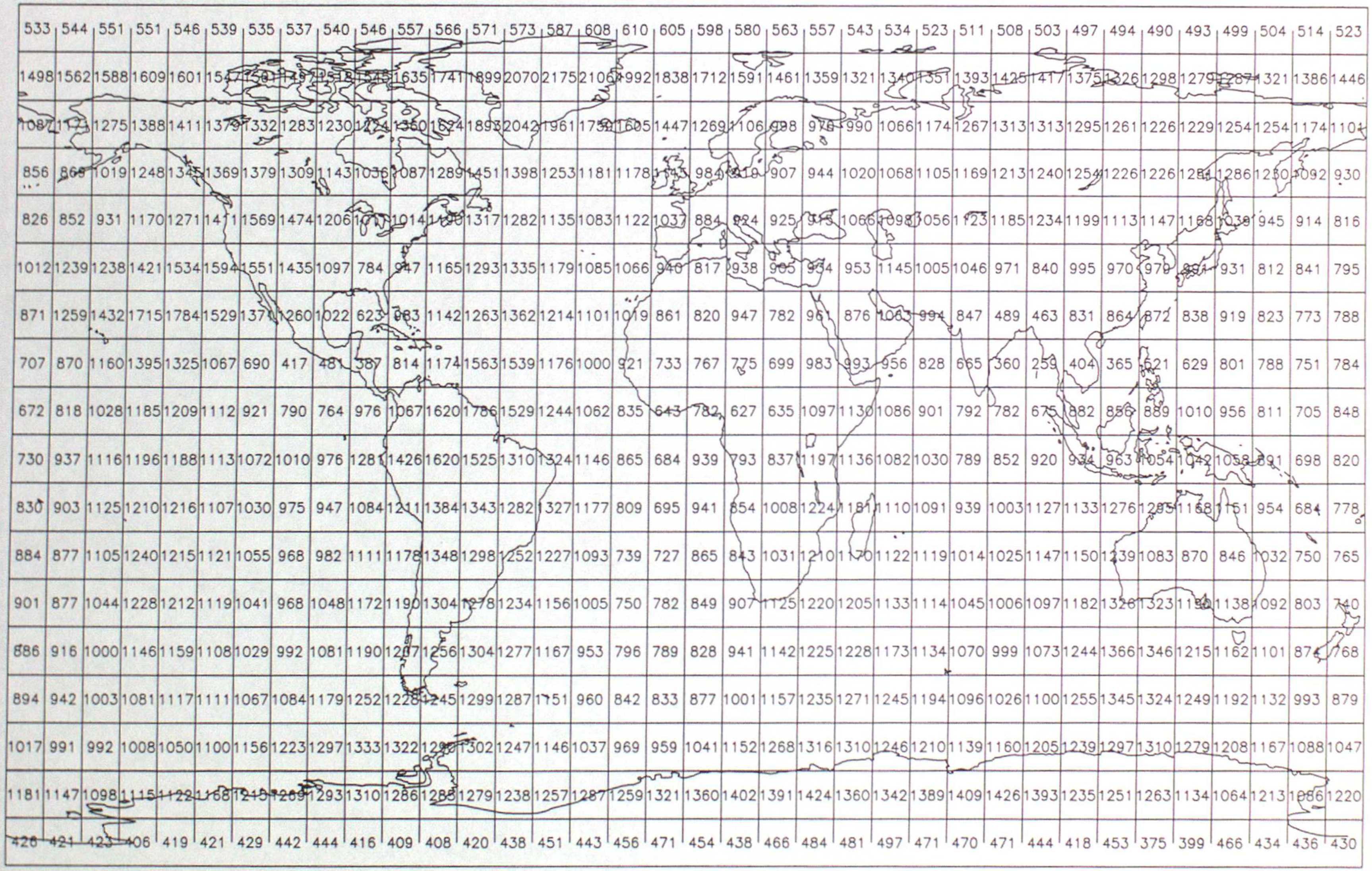
Selection Criteria :All soundings.

Data Extracted :Sounding channels (and approximate weighting function peaks, hPa)

HIRS8 (Surface)
HIRS15 (700)
HIRS11 (500-700)
HIRS4 (400)
AMSUA5 (700)
AMSUA7 (300)
AMSUA9 (100)

:Mean and standard deviation observation-minus-background brightness temperature differences

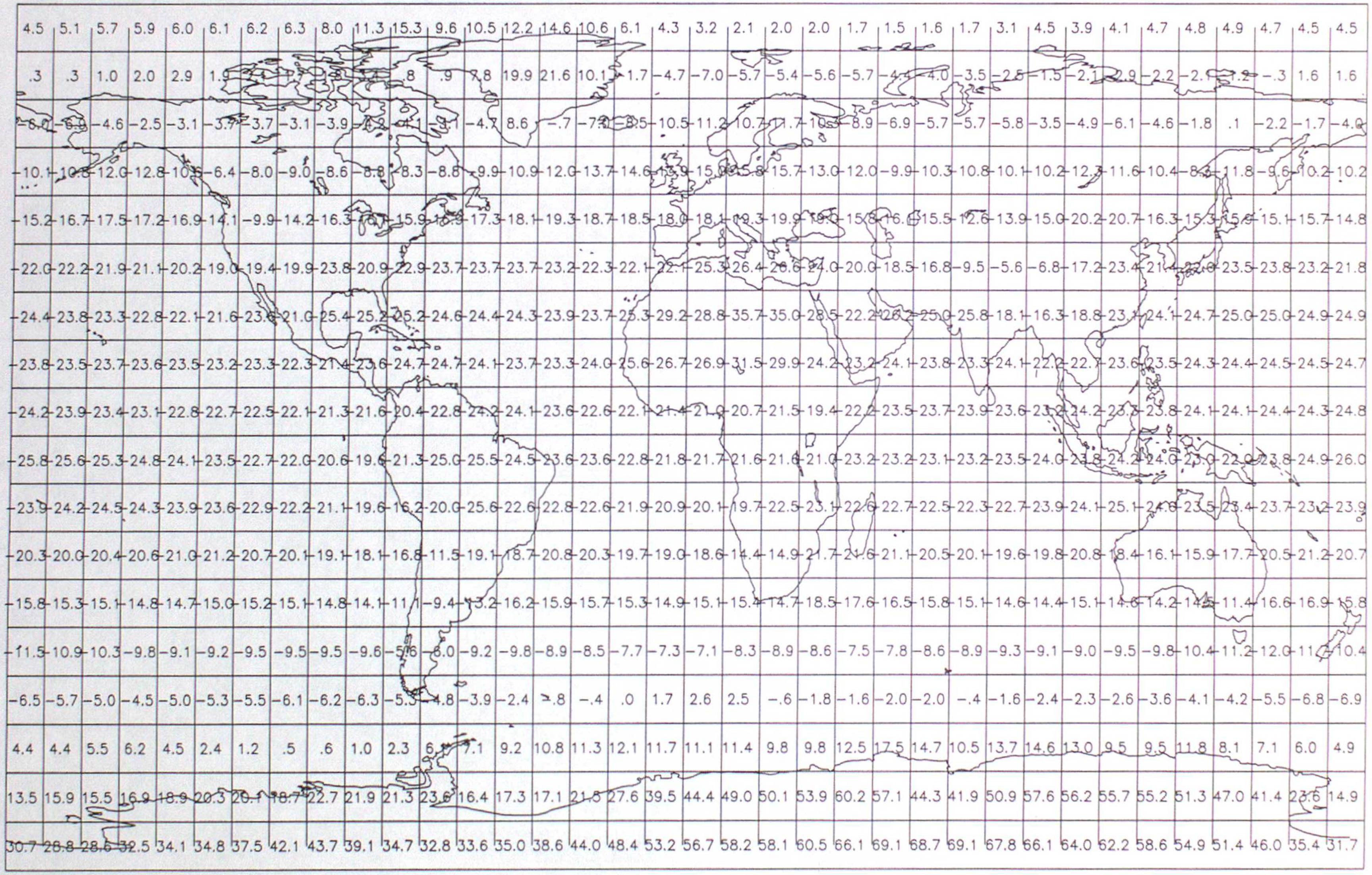
ATOVS : MEAN DAILY NUMBER OF OBSERVATIONS FIGURE 25
SEPTEMBER 2000
NOAA–15, USING ALL OBSERVATIONS
GLOBAL AVERAGE NUMBER OF OBSERVATIONS IN 24 HOURS = 679896



533	544	551	551	546	539	535	537	540	546	557	566	571	573	587	608	610	605	598	580	563	557	543	534	523	511	508	503	497	494	490	493	499	504	514	523
1498	1562	1588	1609	1601	1547	1561	1497	1518	1545	1635	1741	1899	2070	2175	2106	1992	1838	1712	1591	1461	1359	1321	1340	1351	1393	1425	1417	1375	1326	1298	1279	1287	1321	1386	1446
1087	1171	1275	1388	1411	1379	1332	1283	1230	1274	1360	1624	1893	2042	1961	1752	1605	1447	1269	1106	998	976	990	1066	1174	1267	1313	1313	1295	1261	1226	1229	1254	1254	1174	1101
856	865	1019	1248	1345	1369	1379	1309	1143	1036	1087	1289	1451	1398	1253	1181	1178	1145	984	919	907	944	1020	1068	1105	1169	1213	1240	1254	1226	1226	1281	1286	1230	1092	930
826	852	931	1170	1271	1411	1569	1474	1206	1017	1014	1190	1317	1282	1135	1083	1122	1037	884	924	925	915	1066	1098	1056	1123	1185	1234	1199	1113	1147	1168	1039	945	914	816
1012	1239	1238	1421	1534	1594	1551	1435	1097	784	947	1165	1293	1335	1179	1085	1066	940	817	938	905	934	953	1145	1005	1046	971	840	995	970	979	891	931	812	841	795
871	1259	1432	1715	1784	1529	1371	1260	1022	623	983	1142	1263	1362	1214	1101	1019	861	820	947	782	961	876	1063	994	847	489	463	831	864	872	838	919	823	773	788
707	870	1160	1395	1325	1067	690	417	481	387	814	1174	1563	1539	1176	1000	921	733	767	775	699	983	993	956	828	665	360	259	404	365	621	629	801	788	751	784
672	818	1028	1185	1209	1112	921	790	764	976	1067	1620	1786	1529	1244	1062	835	643	782	627	635	1097	1130	1086	901	792	782	675	882	856	889	1010	956	811	705	848
730	937	1116	1196	1188	1113	1072	1010	976	1281	1426	1620	1525	1310	1324	1146	865	684	939	793	837	1197	1136	1082	1030	789	852	920	934	963	1054	1042	1058	891	698	820
830	903	1125	1210	1216	1107	1030	975	947	1084	1211	1384	1343	1282	1327	1177	809	695	941	854	1008	1224	1181	1110	1091	939	1003	1127	1133	1276	1285	1168	1151	954	684	778
884	877	1105	1240	1215	1121	1055	968	982	1111	1178	1348	1298	1252	1227	1093	739	727	865	843	1031	1210	1170	1122	1119	1014	1025	1147	1150	1239	1083	870	846	1032	750	765
901	877	1044	1228	1212	1119	1041	968	1048	1172	1190	1304	1278	1234	1156	1005	750	782	849	907	1125	1220	1205	1133	1114	1045	1006	1097	1182	1326	1323	1190	1138	1092	803	740
886	916	1000	1146	1159	1108	1029	992	1081	1190	1207	1256	1304	1277	1167	953	796	789	828	941	1142	1225	1228	1173	1134	1070	999	1073	1244	1366	1346	1215	1162	1101	874	768
894	942	1003	1081	1117	1111	1067	1084	1179	1252	1228	1245	1299	1287	1151	960	842	833	877	1001	1157	1235	1271	1245	1194	1096	1026	1100	1255	1345	1324	1249	1192	1132	993	879
1017	991	992	1008	1050	1100	1156	1223	1297	1333	1322	1290	1302	1247	1146	1037	969	959	1041	1152	1268	1316	1310	1246	1210	1139	1160	1205	1239	1297	1310	1279	1208	1167	1088	1047
1181	1147	1098	1115	1122	1168	1215	1269	1293	1310	1286	1285	1279	1238	1257	1287	1259	1321	1360	1402	1391	1424	1360	1342	1389	1409	1426	1393	1235	1251	1263	1134	1064	1213	1086	1220
426	421	423	406	419	421	429	442	444	416	409	408	420	438	451	443	456	471	454	438	466	484	481	497	471	470	471	444	418	453	375	399	466	434	436	430

ATOVS : MEAN O−B BRIGHTNESS TEMPERATURE DIFFERENCES (DEG C)
SEPTEMBER 2000 : HIRS8 channel (Surface)
NOAA−15, USING ALL OBSERVATIONS

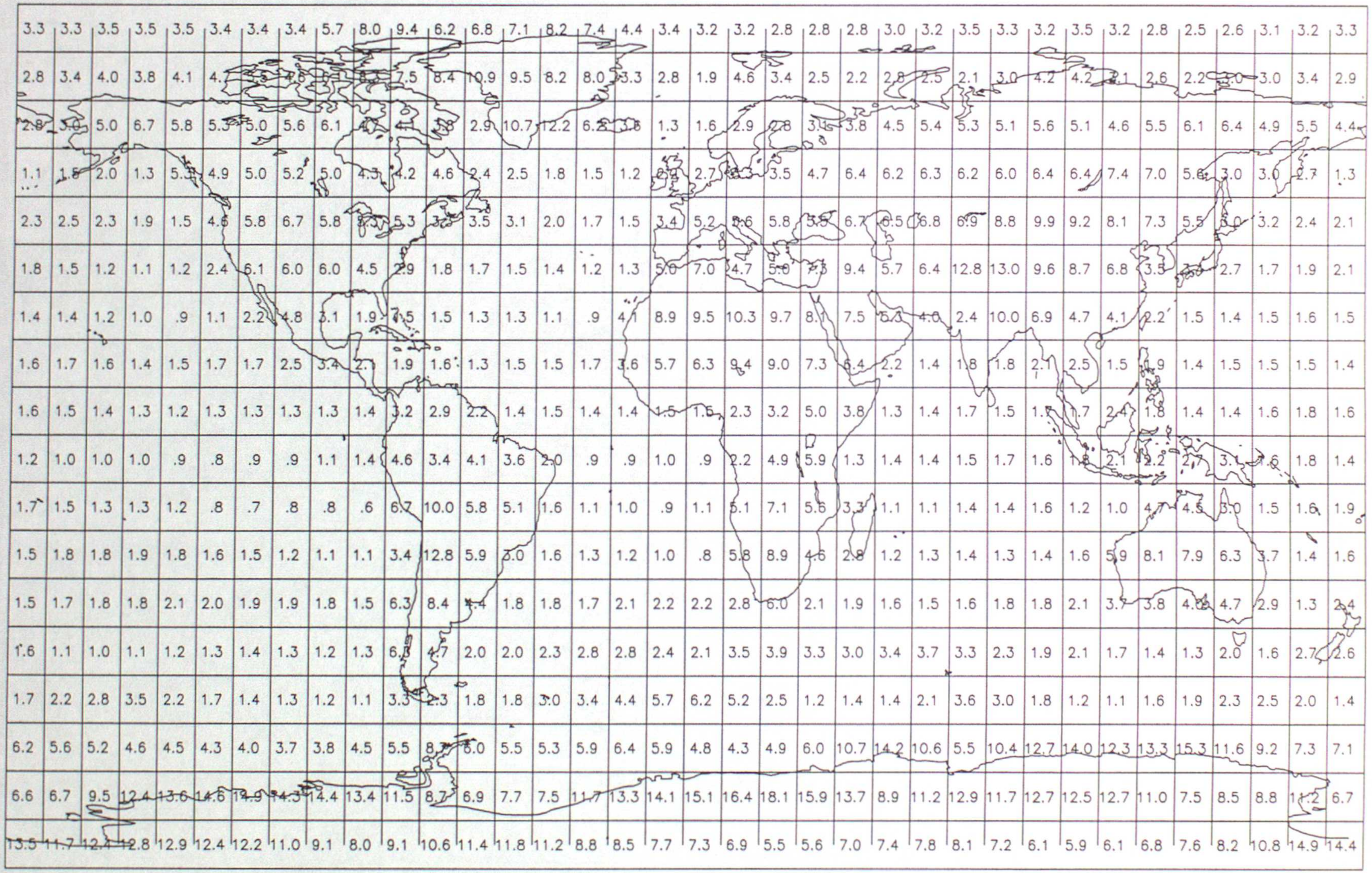
FIGURE 26



4.5	5.1	5.7	5.9	6.0	6.1	6.2	6.3	8.0	11.3	15.3	9.6	10.5	12.2	14.6	10.6	6.1	4.3	3.2	2.1	2.0	2.0	1.7	1.5	1.6	1.7	3.1	4.5	3.9	4.1	4.7	4.8	4.9	4.7	4.5	4.5
.3	.3	1.0	2.0	2.9	1.9	2.4	1.7	1.8	3.4	.8	.9	7.8	19.9	21.6	10.1	−1.7	−4.7	−7.0	−5.7	−5.4	−5.6	−5.7	−4.4	−4.0	−3.5	−2.5	−1.5	−2.1	−2.9	−2.2	−2.1	−1.2	−.3	1.6	1.6
−6.0	−6.9	−4.6	−2.5	−3.1	−3.7	−3.7	−3.1	−3.9	−4.2	−4.1	−3.1	−4.7	8.6	−.7	−7.0	−8.5	−10.5	−11.2	−10.7	−11.7	−10.5	−8.9	−6.9	−5.7	−5.7	−5.8	−3.5	−4.9	−6.1	−4.6	−1.8	.1	−2.2	−1.7	−4.0
−10.1	−10.8	−12.0	−12.8	−10.5	−6.4	−8.0	−9.0	−8.6	−8.8	−8.3	−8.8	−9.9	−10.9	−12.0	−13.7	−14.6	−13.9	−15.0	−15.8	−15.7	−13.0	−12.0	−9.9	−10.3	−10.8	−10.1	−10.2	−12.3	−11.6	−10.4	−8.3	−11.8	−9.6	−10.2	−10.2
−15.2	−16.7	−17.5	−17.2	−16.9	−14.1	−9.9	−14.2	−16.3	−16.7	−15.9	−16.9	−17.3	−18.1	−19.3	−18.7	−18.5	−18.0	−18.1	−19.3	−19.9	−19.0	−15.8	−16.1	−15.5	−12.6	−13.9	−15.0	−20.2	−20.7	−16.3	−15.3	−15.6	−15.1	−15.7	−14.8
−22.0	−22.2	−21.9	−21.1	−20.2	−19.0	−19.4	−19.9	−23.8	−20.9	−22.9	−23.7	−23.7	−23.7	−23.2	−22.3	−22.1	−22.1	−25.3	−26.4	−26.6	−24.0	−20.0	−18.5	−16.8	−9.5	−5.6	−6.8	−17.2	−23.4	−21.4	−22.0	−23.5	−23.8	−23.2	−21.8
−24.4	−23.8	−23.3	−22.8	−22.1	−21.6	−23.6	−21.0	−25.4	−25.2	−25.2	−24.6	−24.4	−24.3	−23.9	−23.7	−25.3	−29.2	−28.8	−35.7	−35.0	−28.5	−22.2	−26.2	−25.0	−25.8	−18.1	−16.3	−18.8	−23.1	−24.1	−24.7	−25.0	−25.0	−24.9	−24.9
−23.8	−23.5	−23.7	−23.6	−23.5	−23.2	−23.3	−22.3	−21.4	−23.6	−24.7	−24.7	−24.1	−23.7	−23.3	−24.0	−25.6	−26.7	−26.9	−31.5	−29.9	−24.2	−23.2	−24.1	−23.8	−23.3	−24.1	−22.2	−22.7	−23.6	−23.5	−24.3	−24.4	−24.5	−24.5	−24.7
−24.2	−23.9	−23.4	−23.1	−22.8	−22.7	−22.5	−22.1	−21.3	−21.6	−20.4	−22.8	−24.2	−24.1	−23.6	−22.6	−22.1	−21.4	−21.0	−20.7	−21.5	−19.4	−22.2	−23.5	−23.7	−23.9	−23.6	−23.2	−24.2	−23.3	−23.8	−24.1	−24.1	−24.4	−24.3	−24.8
−25.8	−25.6	−25.3	−24.8	−24.1	−23.5	−22.7	−22.0	−20.6	−19.6	−21.3	−25.0	−25.5	−24.5	−23.6	−23.6	−22.8	−21.8	−21.7	−21.6	−21.6	−21.0	−23.2	−23.2	−23.1	−23.2	−23.5	−24.0	−23.8	−24.2	−24.0	−23.0	−22.0	−23.8	−24.9	−26.0
−23.9	−24.2	−24.5	−24.3	−23.9	−23.6	−22.9	−22.2	−21.1	−19.6	−16.2	−20.0	−25.6	−22.6	−22.8	−22.6	−21.9	−20.9	−20.1	−19.7	−22.5	−23.1	−22.6	−22.7	−22.5	−22.3	−22.7	−23.9	−24.1	−25.1	−24.6	−23.5	−23.4	−23.7	−23.2	−23.9
−20.3	−20.0	−20.4	−20.6	−21.0	−21.2	−20.7	−20.1	−19.1	−18.1	−16.8	−11.5	−19.1	−18.7	−20.8	−20.3	−19.7	−19.0	−18.6	−14.4	−14.9	−21.7	−21.6	−21.1	−20.5	−20.1	−19.6	−19.8	−20.8	−18.4	−16.1	−15.9	−17.7	−20.5	−21.2	−20.7
−15.8	−15.3	−15.1	−14.8	−14.7	−15.0	−15.2	−15.1	−14.8	−14.1	−11.1	−9.4	−13.2	−16.2	−15.9	−15.7	−15.3	−14.9	−15.1	−15.4	−14.7	−18.5	−17.6	−16.5	−15.8	−15.1	−14.6	−14.4	−15.1	−14.6	−14.2	−14.5	−11.4	−16.6	−16.9	−15.8
−11.5	−10.9	−10.3	−9.8	−9.1	−9.2	−9.5	−9.5	−9.5	−9.6	−5.6	−6.0	−9.2	−9.8	−8.9	−8.5	−7.7	−7.3	−7.1	−8.3	−8.9	−8.6	−7.5	−7.8	−8.6	−8.9	−9.3	−9.1	−9.0	−9.5	−9.8	−10.4	−11.2	−12.0	−11.7	−10.4
−6.5	−5.7	−5.0	−4.5	−5.0	−5.3	−5.5	−6.1	−6.2	−6.3	−5.3	−4.8	−3.9	−2.4	−.8	−.4	.0	1.7	2.6	2.5	−.6	−1.8	−1.6	−2.0	−2.0	−.4	−1.6	−2.4	−2.3	−2.6	−3.6	−4.1	−4.2	−5.5	−6.8	−6.9
4.4	4.4	5.5	6.2	4.5	2.4	1.2	.5	.6	1.0	2.3	[illegible]	7.1	9.2	10.8	11.3	12.1	11.7	11.1	11.4	9.8	9.8	12.5	17.5	14.7	10.5	13.7	14.6	13.0	9.5	9.5	11.8	8.1	7.1	6.0	4.9
13.5	15.9	15.5	16.9	18.9	20.3	20.1	18.7	22.7	21.9	21.3	23.6	16.4	17.3	17.1	21.5	27.6	39.5	44.4	49.0	50.1	53.9	60.2	57.1	44.3	41.9	50.9	57.6	56.2	55.7	55.2	51.3	47.0	41.4	23.6	14.9
30.7	28.8	28.6	32.5	34.1	34.8	37.5	42.1	43.7	39.1	34.7	32.8	33.6	35.0	38.6	44.0	48.4	53.2	56.7	58.2	58.1	60.5	66.1	69.1	68.7	69.1	67.8	66.1	64.0	62.2	58.6	54.9	51.4	46.0	35.4	31.7

ATOVS : SD O-B BRIGHTNESS TEMPERATURE DIFFERENCES(DEG C)
SEPTEMBER 2000 : HIRS8 channel (Surface)
NOAA-15, USING ALL OBSERVATIONS

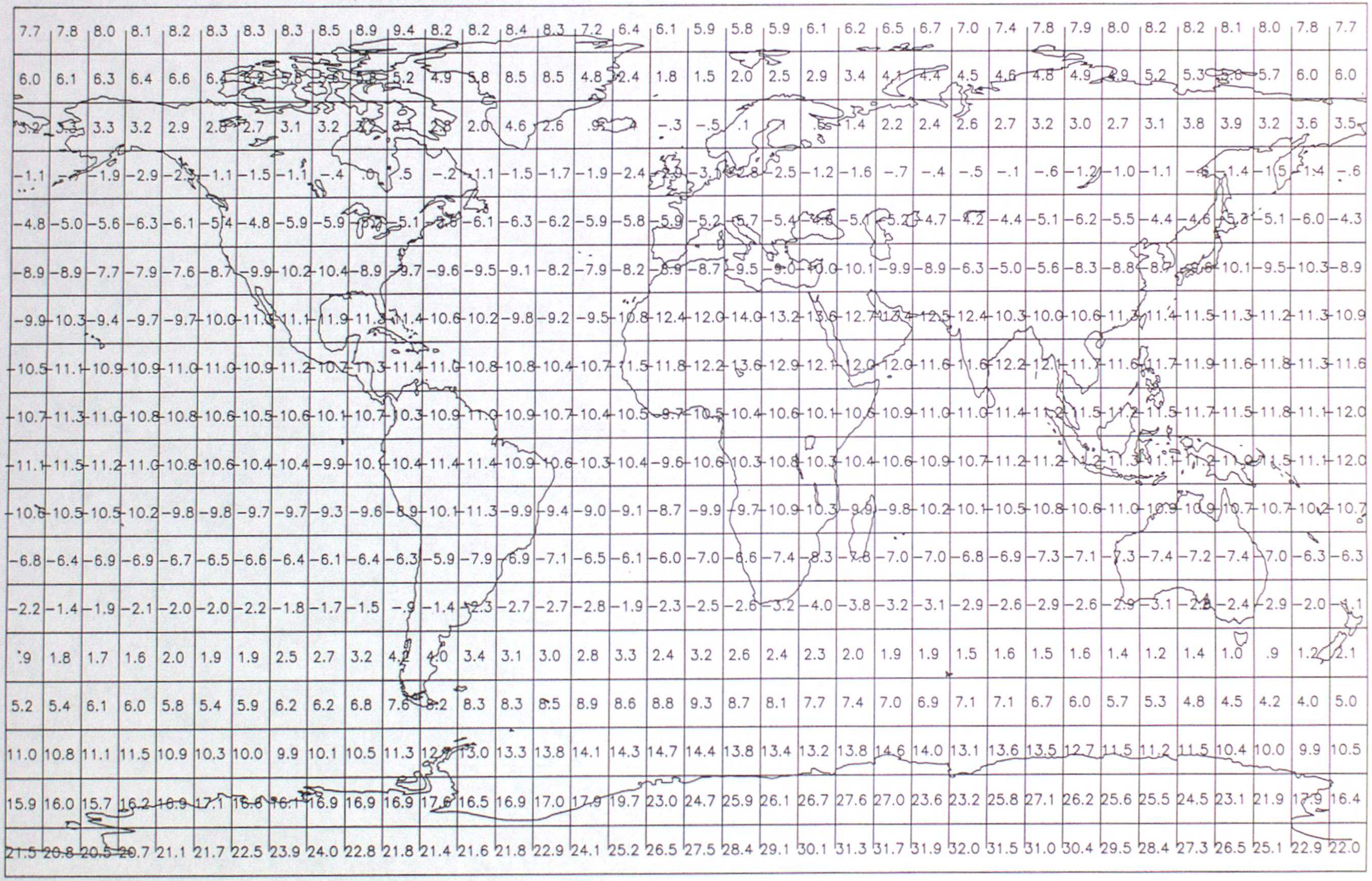
FIGURE 27



3.3	3.3	3.5	3.5	3.5	3.4	3.4	3.4	5.7	8.0	9.4	6.2	6.8	7.1	8.2	7.4	4.4	3.4	3.2	3.2	2.8	2.8	2.8	3.0	3.2	3.5	3.3	3.2	3.5	3.2	2.8	2.5	2.6	3.1	3.2	3.3
2.8	3.4	4.0	3.8	4.1	4.7	5.5	4.6	[illegible]	[illegible]	7.5	8.4	10.9	9.5	8.2	8.0	3.3	2.8	1.9	4.6	3.4	2.5	2.2	2.8	2.5	2.1	3.0	4.2	4.2	2.1	2.6	2.2	3.0	3.0	3.4	2.9
2.8	3.0	5.0	6.7	5.8	5.3	5.0	5.6	6.1	4.7	4.1	3.8	2.9	10.7	12.2	6.2	3.8	1.3	1.6	2.9	2.8	3.1	3.8	4.5	5.4	5.3	5.1	5.6	5.1	4.6	5.5	6.1	6.4	4.9	5.5	4.4
1.1	1.5	2.0	1.3	5.3	4.9	5.0	5.2	5.0	4.3	4.2	4.6	2.4	2.5	1.8	1.5	1.2	2.2	2.7	3.3	3.5	4.7	6.4	6.2	6.3	6.2	6.0	6.4	6.4	7.4	7.0	5.6	3.0	3.0	2.7	1.3
2.3	2.5	2.3	1.9	1.5	4.6	5.8	6.7	5.8	3.3	5.3	3.3	3.5	3.1	2.0	1.7	1.5	3.4	5.2	5.6	5.8	3.5	6.7	6.5	6.8	6.9	8.8	9.9	9.2	8.1	7.3	5.5	3.0	3.2	2.4	2.1
1.8	1.5	1.2	1.1	1.2	2.4	6.1	6.0	6.0	4.5	2.9	1.8	1.7	1.5	1.4	1.2	1.3	5.0	7.0	4.7	5.0	7.3	9.4	5.7	6.4	12.8	13.0	9.6	8.7	6.8	3.5	3.3	2.7	1.7	1.9	2.1
1.4	1.4	1.2	1.0	.9	1.1	2.2	4.8	3.1	1.9	4.5	1.5	1.3	1.3	1.1	.9	4.1	8.9	9.5	10.3	9.7	8.1	7.5	5.3	4.0	2.4	10.0	6.9	4.7	4.1	2.2	1.5	1.4	1.5	1.6	1.5
1.6	1.7	1.6	1.4	1.5	1.7	1.7	2.5	3.4	2.1	1.9	1.6	1.3	1.5	1.5	1.7	3.6	5.7	6.3	9.4	9.0	7.3	6.4	2.2	1.4	1.8	1.8	2.1	2.5	1.5	1.9	1.4	1.5	1.5	1.5	1.4
1.6	1.5	1.4	1.3	1.2	1.3	1.3	1.3	1.3	1.4	3.2	2.9	2.2	1.4	1.5	1.4	1.4	1.5	1.5	2.3	3.2	5.0	3.8	1.3	1.4	1.7	1.5	1.7	1.7	2.4	1.8	1.4	1.4	1.6	1.8	1.6
1.2	1.0	1.0	1.0	.9	.8	.9	.9	1.1	1.4	4.6	3.4	4.1	3.6	2.0	.9	.9	1.0	.9	2.2	4.9	5.9	1.3	1.4	1.4	1.5	1.7	1.6	1.8	2.1	2.2	2.7	3.1	1.6	1.8	1.4
1.7	1.5	1.3	1.3	1.2	.8	.7	.8	.8	.6	6.7	10.0	5.8	5.1	1.6	1.1	1.0	.9	1.1	5.1	7.1	5.6	3.3	1.1	1.1	1.4	1.4	1.6	1.2	1.0	4.7	4.5	3.0	1.5	1.6	1.9
1.5	1.8	1.8	1.9	1.8	1.6	1.5	1.2	1.1	1.1	3.4	12.8	5.9	3.0	1.6	1.3	1.2	1.0	.8	5.8	8.9	4.6	2.8	1.2	1.3	1.4	1.3	1.4	1.6	5.9	8.1	7.9	6.3	3.7	1.4	1.6
1.5	1.7	1.8	1.8	2.1	2.0	1.9	1.9	1.8	1.5	6.3	8.4	4.4	1.8	1.8	1.7	2.1	2.2	2.2	2.8	6.0	2.1	1.9	1.6	1.5	1.6	1.8	1.8	2.1	3.7	3.8	4.6	4.7	2.9	1.3	2.4
1.6	1.1	1.0	1.1	1.2	1.3	1.4	1.3	1.2	1.3	6.3	4.7	2.0	2.0	2.3	2.8	2.8	2.4	2.1	3.5	3.9	3.3	3.0	3.4	3.7	3.3	2.3	1.9	2.1	1.7	1.4	1.3	2.0	1.6	2.7	2.6
1.7	2.2	2.8	3.5	2.2	1.7	1.4	1.3	1.2	1.1	3.3	2.3	1.8	1.8	3.0	3.4	4.4	5.7	6.2	5.2	2.5	1.2	1.4	1.4	2.1	3.6	3.0	1.8	1.2	1.1	1.6	1.9	2.3	2.5	2.0	1.4
6.2	5.6	5.2	4.6	4.5	4.3	4.0	3.7	3.8	4.5	5.5	8.7	6.0	5.5	5.3	5.9	6.4	5.9	4.8	4.3	4.9	6.0	10.7	14.2	10.6	5.5	10.4	12.7	14.0	12.3	13.3	15.3	11.6	9.2	7.3	7.1
6.6	6.7	9.5	12.4	13.6	14.6	14.9	14.3	14.4	13.4	11.5	8.7	6.9	7.7	7.5	11.7	13.3	14.1	15.1	16.4	18.1	15.9	13.7	8.9	11.2	12.9	11.7	12.7	12.5	12.7	11.0	7.5	8.5	8.8	11.2	6.7
13.5	11.7	12.4	12.8	12.9	12.4	12.2	11.0	9.1	8.0	9.1	10.6	11.4	11.8	11.2	8.8	8.5	7.7	7.3	6.9	5.5	5.6	7.0	7.4	7.8	8.1	7.2	6.1	5.9	6.1	6.8	7.6	8.2	10.8	14.9	14.4

ATOVS : MEAN O−B BRIGHTNESS TEMPERATURE DIFFERENCES (DEG C)
SEPTEMBER 2000 : HIRS15 Channel (700 hPa)
NOAA−15, USING ALL OBSERVATIONS

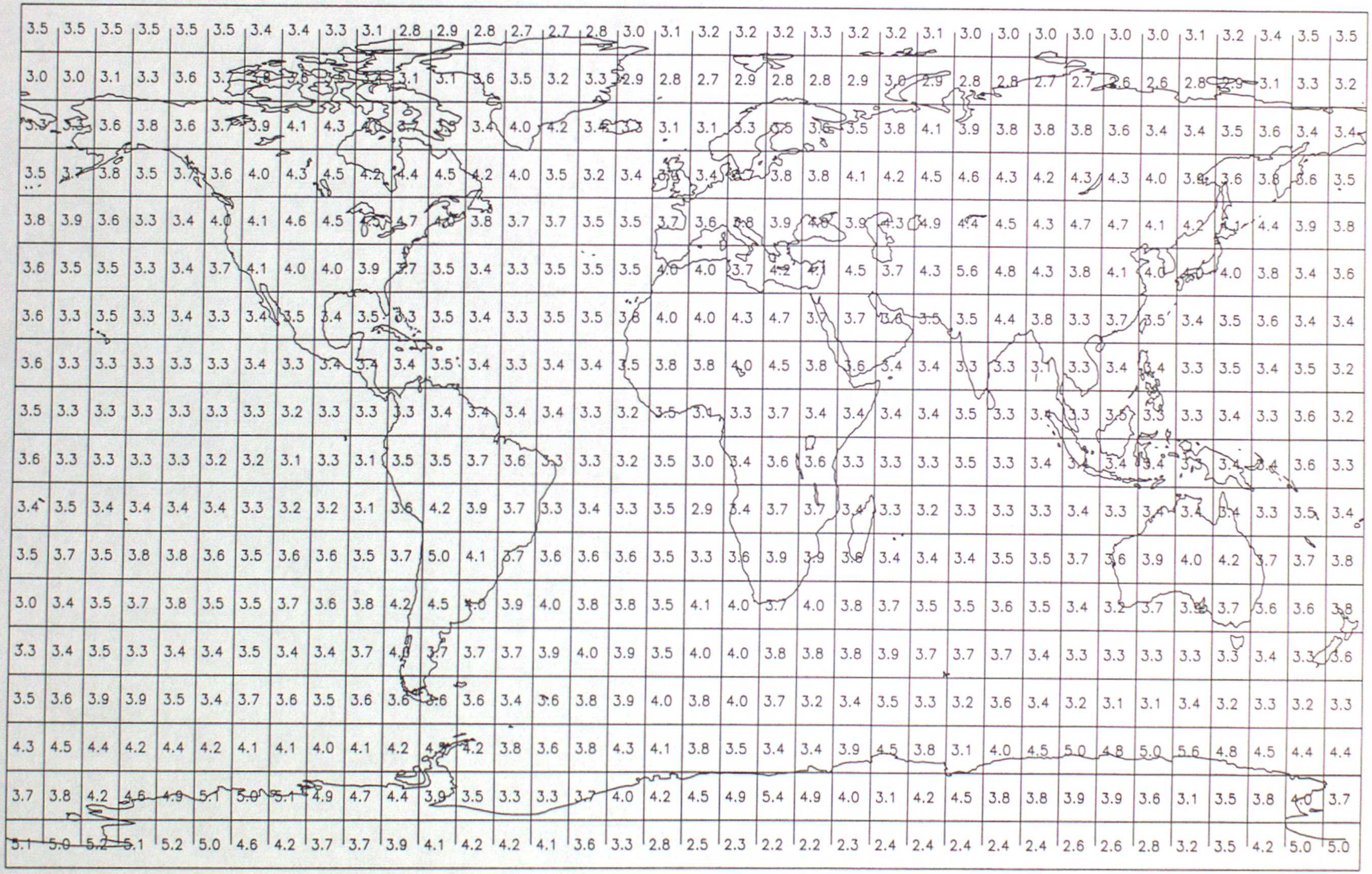
FIGURE 28



7.7	7.8	8.0	8.1	8.2	8.3	8.3	8.3	8.5	8.9	9.4	8.2	8.2	8.4	8.3	7.2	6.4	6.1	5.9	5.8	5.9	6.1	6.2	6.5	6.7	7.0	7.4	7.8	7.9	8.0	8.2	8.2	8.1	8.0	7.8	7.7
6.0	6.1	6.3	6.4	6.6	6.4	6.2	5.6	[illegible]	5.8	5.2	4.9	5.8	8.5	8.5	4.8	2.4	1.8	1.5	2.0	2.5	2.9	3.4	4.1	4.4	4.5	4.6	4.8	4.9	4.9	5.2	5.3	5.6	5.7	6.0	6.0
3.2	3.3	3.3	3.2	2.9	2.8	2.7	3.1	3.2	3.2	3.1	2.8	2.0	4.6	2.6	.9	.4	−.3	−.5	.1	.1	.5	1.4	2.2	2.4	2.6	2.7	3.2	3.0	2.7	3.1	3.8	3.9	3.2	3.6	3.5
−1.1	−.7	−1.9	−2.9	−2.3	−1.1	−1.5	−1.1	−.4	.0	.5	−.2	−1.1	−1.5	−1.7	−1.9	−2.4	−2.9	−3.1	−2.8	−2.5	−1.2	−1.6	−.7	−.4	−.5	−.1	−.6	−1.2	−1.0	−1.1	−.6	−1.4	−1.5	−1.4	−.6
−4.8	−5.0	−5.6	−6.3	−6.1	−5.4	−4.8	−5.9	−5.9	−5.2	−5.1	−5.6	−6.1	−6.3	−6.2	−5.9	−5.8	−5.9	−5.2	−5.7	−5.4	−4.8	−5.1	−5.2	−4.7	−4.2	−4.4	−5.1	−6.2	−5.5	−4.4	−4.6	−5.3	−5.1	−6.0	−4.3
−8.9	−8.9	−7.7	−7.9	−7.6	−8.7	−9.9	−10.2	−10.4	−8.9	−9.7	−9.6	−9.5	−9.1	−8.2	−7.9	−8.2	−8.9	−8.7	−9.5	−9.0	−10.0	−10.1	−9.9	−8.9	−6.3	−5.0	−5.6	−8.3	−8.8	−8.7	−9.6	−10.1	−9.5	−10.3	−8.9
−9.9	−10.3	−9.4	−9.7	−9.7	−10.0	−11.5	−11.1	−11.9	−11.8	−11.4	−10.6	−10.2	−9.8	−9.2	−9.5	−10.8	−12.4	−12.0	−14.0	−13.2	−13.6	−12.7	−13.4	−12.5	−12.4	−10.3	−10.0	−10.6	−11.3	−11.4	−11.5	−11.3	−11.2	−11.3	−10.9
−10.5	−11.1	−10.9	−10.9	−11.0	−11.0	−10.9	−11.2	−10.7	−11.3	−11.4	−11.0	−10.8	−10.8	−10.4	−10.7	−11.5	−11.8	−12.2	−13.6	−12.9	−12.1	−12.0	−12.0	−11.6	−11.6	−12.2	−12.1	−11.7	−11.6	−11.7	−11.9	−11.6	−11.8	−11.3	−11.6
−10.7	−11.3	−11.0	−10.8	−10.8	−10.6	−10.5	−10.6	−10.1	−10.7	−10.3	−10.9	−11.0	−10.9	−10.7	−10.4	−10.5	−9.7	−10.5	−10.4	−10.6	−10.1	−10.6	−10.9	−11.0	−11.0	−11.4	−11.2	−11.5	−11.2	−11.5	−11.7	−11.5	−11.8	−11.1	−12.0
−11.1	−11.5	−11.2	−11.0	−10.8	−10.6	−10.4	−10.4	−9.9	−10.1	−10.4	−11.4	−11.4	−10.9	−10.6	−10.3	−10.4	−9.6	−10.6	−10.3	−10.8	−10.3	−10.4	−10.6	−10.9	−10.7	−11.2	−11.2	−11.2	−11.3	−11.1	−11.2	−11.0	−11.5	−11.1	−12.0
−10.6	−10.5	−10.5	−10.2	−9.8	−9.8	−9.7	−9.7	−9.3	−9.6	−8.9	−10.1	−11.3	−9.9	−9.4	−9.0	−9.1	−8.7	−9.9	−9.7	−10.9	−10.3	−9.9	−9.8	−10.2	−10.1	−10.5	−10.8	−10.6	−11.0	−10.9	−10.9	−10.7	−10.7	−10.2	−10.7
−6.8	−6.4	−6.9	−6.9	−6.7	−6.5	−6.6	−6.4	−6.1	−6.4	−6.3	−5.9	−7.9	−6.9	−7.1	−6.5	−6.1	−6.0	−7.0	−6.6	−7.4	−8.3	−7.8	−7.0	−7.0	−6.8	−6.9	−7.3	−7.1	−7.3	−7.4	−7.2	−7.4	−7.0	−6.3	−6.3
−2.2	−1.4	−1.9	−2.1	−2.0	−2.0	−2.2	−1.8	−1.7	−1.5	−.9	−1.4	−2.3	−2.7	−2.7	−2.8	−1.9	−2.3	−2.5	−2.6	−3.2	−4.0	−3.8	−3.2	−3.1	−2.9	−2.6	−2.9	−2.6	−2.9	−3.1	−2.8	−2.4	−2.9	−2.0	−1.1
.9	1.8	1.7	1.6	2.0	1.9	1.9	2.5	2.7	3.2	4.2	4.0	3.4	3.1	3.0	2.8	3.3	2.4	3.2	2.6	2.4	2.3	2.0	1.9	1.9	1.5	1.6	1.5	1.6	1.4	1.2	1.4	1.0	.9	1.2	2.1
5.2	5.4	6.1	6.0	5.8	5.4	5.9	6.2	6.2	6.8	7.6	8.2	8.3	8.3	8.5	8.9	8.6	8.8	9.3	8.7	8.1	7.7	7.4	7.0	6.9	7.1	7.1	6.7	6.0	5.7	5.3	4.8	4.5	4.2	4.0	5.0
11.0	10.8	11.1	11.5	10.9	10.3	10.0	9.9	10.1	10.5	11.3	12.9	13.0	13.3	13.8	14.1	14.3	14.7	14.4	13.8	13.4	13.2	13.8	14.6	14.0	13.1	13.6	13.5	12.7	11.5	11.2	11.5	10.4	10.0	9.9	10.5
15.9	16.0	15.7	16.2	16.9	17.1	16.6	16.1	16.9	16.9	16.9	17.6	16.5	16.9	17.0	17.9	19.7	23.0	24.7	25.9	26.1	26.7	27.6	27.0	23.6	23.2	25.8	27.1	26.2	25.6	25.5	24.5	23.1	21.9	17.9	16.4
21.5	20.8	20.5	20.7	21.1	21.7	22.5	23.9	24.0	22.8	21.8	21.4	21.6	21.8	22.9	24.1	25.2	26.5	27.5	28.4	29.1	30.1	31.3	31.7	31.9	32.0	31.5	31.0	30.4	29.5	28.4	27.3	26.5	25.1	22.9	22.0

ATOVS : SD O–B BRIGHTNESS TEMPERATURE DIFFERENCES(DEG C)
SEPTEMBER 2000 : HIRS15 channel (700 hPa)
NOAA–15, USING ALL OBSERVATIONS

FIGURE 29

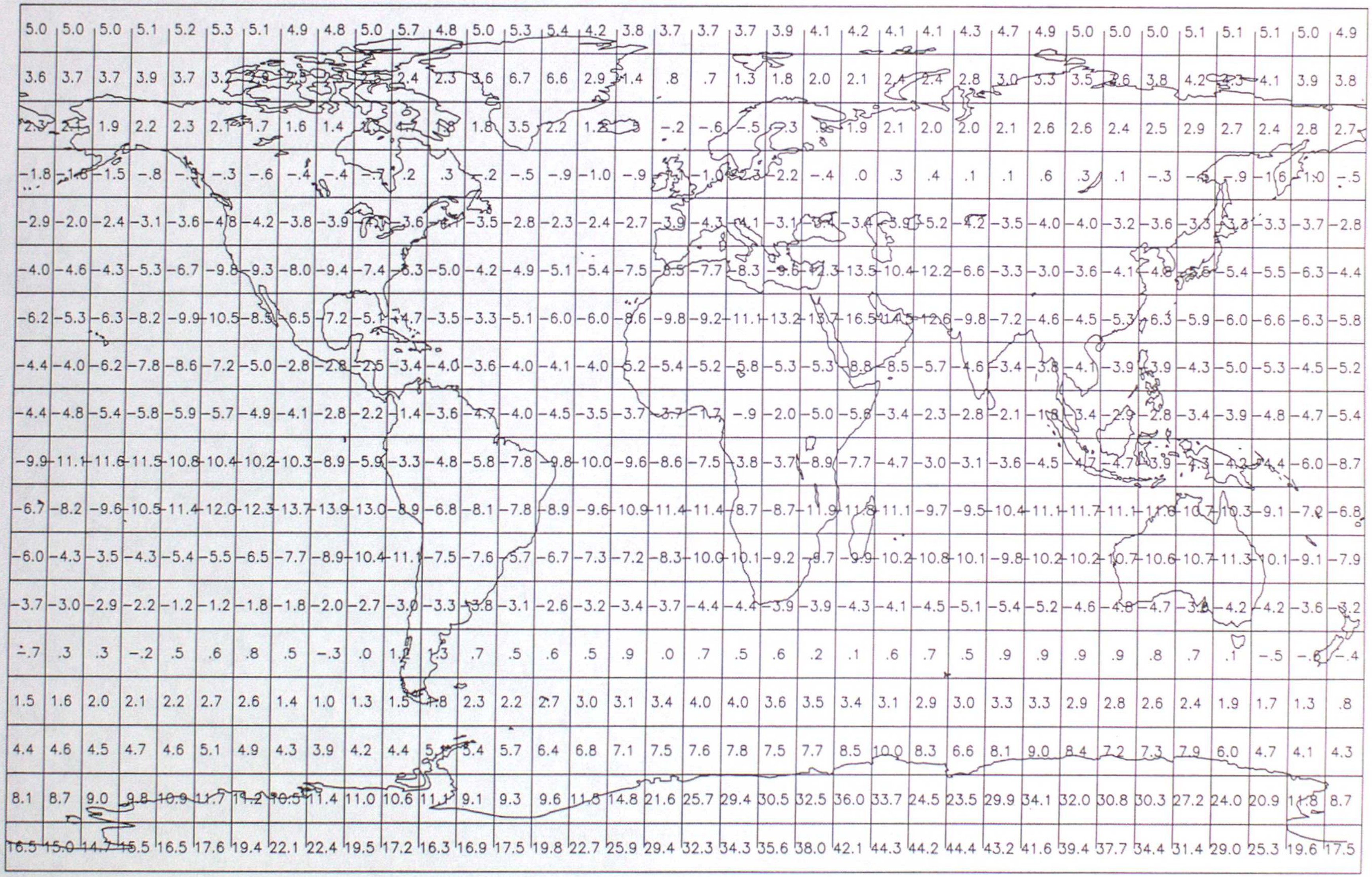


3.5	3.5	3.5	3.5	3.5	3.5	3.4	3.4	3.3	3.1	2.8	2.9	2.8	2.7	2.7	2.8	3.0	3.1	3.2	3.2	3.2	3.3	3.2	3.2	3.1	3.0	3.0	3.0	3.0	3.0	3.0	3.1	3.2	3.4	3.5	3.5
3.0	3.0	3.1	3.3	3.6	3.7	3.8	3.6	[illegible]	3.4	3.1	3.1	3.6	3.5	3.2	3.3	2.9	2.8	2.7	2.9	2.8	2.8	2.9	3.0	2.9	2.8	2.8	2.7	2.7	2.6	2.6	2.8	2.9	3.1	3.3	3.2
3.3	3.3	3.6	3.8	3.6	3.7	3.9	4.1	4.3	4.0	3.7	3.5	3.4	4.0	4.2	3.4	3.3	3.1	3.1	3.3	3.5	3.6	3.5	3.8	4.1	3.9	3.8	3.8	3.8	3.6	3.4	3.4	3.5	3.6	3.4	3.4
3.5	3.7	3.8	3.5	3.7	3.6	4.0	4.3	4.5	4.2	4.4	4.5	4.2	4.0	3.5	3.2	3.4	3.9	3.4	3.7	3.8	3.8	4.1	4.2	4.5	4.6	4.3	4.2	4.3	4.3	4.0	3.9	3.6	3.8	3.6	3.5
3.8	3.9	3.6	3.3	3.4	4.0	4.1	4.6	4.5	4.5	4.7	4.0	3.8	3.7	3.7	3.5	3.5	3.7	3.6	3.8	3.9	4.0	3.9	4.3	4.9	4.4	4.5	4.3	4.7	4.7	4.1	4.2	4.1	4.4	3.9	3.8
3.6	3.5	3.5	3.3	3.4	3.7	4.1	4.0	4.0	3.9	3.7	3.5	3.4	3.3	3.5	3.5	3.5	4.0	4.0	3.7	4.2	4.1	4.5	3.7	4.3	5.6	4.8	4.3	3.8	4.1	4.0	4.0	4.0	3.8	3.4	3.6
3.6	3.3	3.5	3.3	3.4	3.3	3.4	3.5	3.4	3.5	3.3	3.5	3.4	3.3	3.5	3.5	3.8	4.0	4.0	4.3	4.7	3.7	3.7	3.6	3.5	3.5	4.4	3.8	3.3	3.7	3.5	3.4	3.5	3.6	3.4	3.4
3.6	3.3	3.3	3.3	3.3	3.3	3.4	3.3	3.4	3.4	3.4	3.5	3.4	3.3	3.4	3.4	3.5	3.8	3.8	4.0	4.5	3.8	3.6	3.4	3.4	3.3	3.3	3.1	3.3	3.4	3.4	3.3	3.5	3.4	3.5	3.2
3.5	3.3	3.3	3.3	3.3	3.3	3.3	3.2	3.3	3.3	3.3	3.4	3.4	3.4	3.4	3.3	3.2	3.5	3.1	3.3	3.7	3.4	3.4	3.4	3.4	3.5	3.3	3.4	3.3	3.5	3.3	3.3	3.4	3.3	3.6	3.2
3.6	3.3	3.3	3.3	3.3	3.2	3.2	3.1	3.3	3.1	3.5	3.5	3.7	3.6	3.3	3.3	3.2	3.5	3.0	3.4	3.6	3.6	3.3	3.3	3.3	3.5	3.3	3.4	3.4	3.4	3.4	3.3	3.4	3.4	3.6	3.3
3.4	3.5	3.4	3.4	3.4	3.4	3.3	3.2	3.2	3.1	3.6	4.2	3.9	3.7	3.3	3.4	3.3	3.5	2.9	3.4	3.7	3.7	3.4	3.3	3.2	3.3	3.3	3.3	3.4	3.3	3.4	3.4	3.4	3.3	3.5	3.4
3.5	3.7	3.5	3.8	3.8	3.6	3.5	3.6	3.6	3.5	3.7	5.0	4.1	3.7	3.6	3.6	3.6	3.5	3.3	3.6	3.9	3.9	3.6	3.4	3.4	3.4	3.5	3.5	3.7	3.6	3.9	4.0	4.2	3.7	3.7	3.8
3.0	3.4	3.5	3.7	3.8	3.5	3.5	3.7	3.6	3.8	4.2	4.5	4.0	3.9	4.0	3.8	3.8	3.5	4.1	4.0	3.7	4.0	3.8	3.7	3.5	3.5	3.6	3.5	3.4	3.2	3.7	3.9	3.7	3.6	3.6	3.8
3.3	3.4	3.5	3.3	3.4	3.4	3.5	3.4	3.4	3.7	4.0	3.7	3.7	3.7	3.9	4.0	3.9	3.5	4.0	4.0	3.8	3.8	3.8	3.9	3.7	3.7	3.7	3.4	3.3	3.3	3.3	3.3	3.3	3.4	3.3	3.6
3.5	3.6	3.9	3.9	3.5	3.4	3.7	3.6	3.5	3.6	3.6	3.6	3.6	3.4	3.6	3.8	3.9	4.0	3.8	4.0	3.7	3.2	3.4	3.5	3.3	3.2	3.6	3.4	3.2	3.1	3.1	3.4	3.2	3.3	3.2	3.3
4.3	4.5	4.4	4.2	4.4	4.2	4.1	4.1	4.0	4.1	4.2	4.5	4.2	3.8	3.6	3.8	4.3	4.1	3.8	3.5	3.4	3.4	3.9	4.5	3.8	3.1	4.0	4.5	5.0	4.8	5.0	5.6	4.8	4.5	4.4	4.4
3.7	3.8	4.2	4.6	4.9	5.1	5.0	5.1	4.9	4.7	4.4	3.9	3.5	3.3	3.3	3.7	4.0	4.2	4.5	4.9	5.4	4.9	4.0	3.1	4.2	4.5	3.8	3.8	3.9	3.9	3.6	3.1	3.5	3.8	4.0	3.7
5.1	5.0	5.2	5.1	5.2	5.0	4.6	4.2	3.7	3.7	3.9	4.1	4.2	4.2	4.1	3.6	3.3	2.8	2.5	2.3	2.2	2.2	2.3	2.4	2.4	2.4	2.4	2.4	2.6	2.6	2.8	3.2	3.5	4.2	5.0	5.0

ATOVS : MEAN O-B BRIGHTNESS TEMPERATURE DIFFERENCES (DEG C) FIGURE 30

SEPTEMBER 2000 : HIRS11 Channel (500-700 hPa)

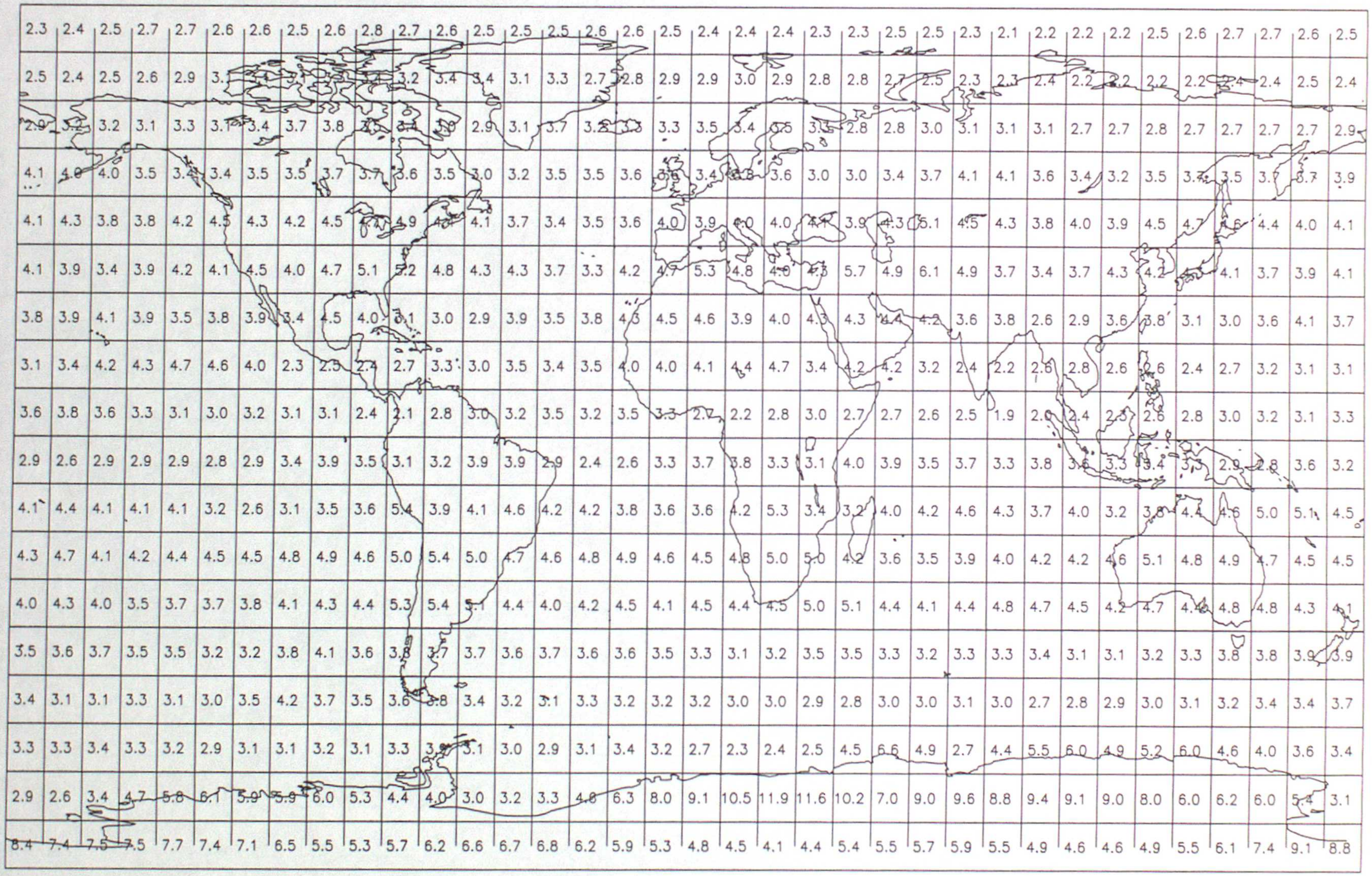
NOAA-15, USING ALL OBSERVATIONS



5.0	5.0	5.0	5.1	5.2	5.3	5.1	4.9	4.8	5.0	5.7	4.8	5.0	5.3	5.4	4.2	3.8	3.7	3.7	3.7	3.9	4.1	4.2	4.1	4.1	4.3	4.7	4.9	5.0	5.0	5.0	5.1	5.1	5.1	5.0	4.9
3.6	3.7	3.7	3.9	3.7	3.2	2.9	2.5	[illegible]	[illegible]	2.4	2.3	3.6	6.7	6.6	2.9	1.4	.8	.7	1.3	1.8	2.0	2.1	2.4	2.4	2.8	3.0	3.3	3.5	2.6	3.8	4.2	2.3	4.1	3.9	3.8
2.3	2.1	1.9	2.2	2.3	2.1	1.7	1.6	1.4	[illegible]	4.7	1.8	1.8	3.5	2.2	1.2	[illegible]	-.2	-.6	-.5	-.3	.9	1.9	2.1	2.0	2.0	2.1	2.6	2.6	2.4	2.5	2.9	2.7	2.4	2.8	2.7
-1.8	-1.6	-1.5	-.8	-.3	-.3	-.6	-.4	-.4	-.7	.2	.3	-.2	-.5	-.9	-1.0	-.9	-1.1	-1.0	-2.3	-2.2	-.4	.0	.3	.4	.1	.1	.6	.3	.1	-.3	[illegible]	-.9	-1.6	-1.0	-.5
-2.9	-2.0	-2.4	-3.1	-3.6	-4.8	-4.2	-3.8	-3.9	[illegible]	-3.6	[illegible]	-3.5	-2.8	-2.3	-2.4	-2.7	-3.9	-4.3	-4.1	-3.1	[illegible]	-3.4	-3.9	-5.2	-4.2	-3.5	-4.0	-4.0	-3.2	-3.6	-3.3	-3.3	-3.3	-3.7	-2.8
-4.0	-4.6	-4.3	-5.3	-6.7	-9.8	-9.3	-8.0	-9.4	-7.4	-6.3	-5.0	-4.2	-4.9	-5.1	-5.4	-7.5	-8.5	-7.7	-8.3	-9.6	-12.3	-13.5	-10.4	-12.2	-6.6	-3.3	-3.0	-3.6	-4.1	-4.8	-5.6	-5.4	-5.5	-6.3	-4.4
-6.2	-5.3	-6.3	-8.2	-9.9	-10.5	-8.5	-6.5	-7.2	-5.1	-4.7	-3.5	-3.3	-5.1	-6.0	-6.0	-8.6	-9.8	-9.2	-11.1	-13.2	-13.7	-16.5	-14.5	-12.6	-9.8	-7.2	-4.6	-4.5	-5.3	-6.3	-5.9	-6.0	-6.6	-6.3	-5.8
-4.4	-4.0	-6.2	-7.8	-8.6	-7.2	-5.0	-2.8	-2.8	-2.5	-3.4	-4.0	-3.6	-4.0	-4.1	-4.0	-5.2	-5.4	-5.2	-5.8	-5.3	-5.3	-8.8	-8.5	-5.7	-4.6	-3.4	-3.8	-4.1	-3.9	-3.9	-4.3	-5.0	-5.3	-4.5	-5.2
-4.4	-4.8	-5.4	-5.8	-5.9	-5.7	-4.9	-4.1	-2.8	-2.2	-1.4	-3.6	-4.7	-4.0	-4.5	-3.5	-3.7	-3.7	-1.7	-.9	-2.0	-5.0	-5.6	-3.4	-2.3	-2.8	-2.1	-1.8	-3.4	-2.9	-2.8	-3.4	-3.9	-4.8	-4.7	-5.4
-9.9	-11.1	-11.6	-11.5	-10.8	-10.4	-10.2	-10.3	-8.9	-5.9	-3.3	-4.8	-5.8	-7.8	-9.8	-10.0	-9.6	-8.6	-7.5	-3.8	-3.7	-8.9	-7.7	-4.7	-3.0	-3.1	-3.6	-4.5	-4.7	-4.7	-3.9	-4.3	-4.2	-4.4	-6.0	-8.7
-6.7	-8.2	-9.6	-10.5	-11.4	-12.0	-12.3	-13.7	-13.9	-13.0	-8.9	-6.8	-8.1	-7.8	-8.9	-9.6	-10.9	-11.4	-11.4	-8.7	-8.7	-11.9	-11.8	-11.1	-9.7	-9.5	-10.4	-11.1	-11.7	-11.1	-11.6	-10.7	-10.3	-9.1	-7.2	-6.8
-6.0	-4.3	-3.5	-4.3	-5.4	-5.5	-6.5	-7.7	-8.9	-10.4	-11.1	-7.5	-7.6	-5.7	-6.7	-7.3	-7.2	-8.3	-10.0	-10.1	-9.2	-9.7	-9.9	-10.2	-10.8	-10.1	-9.8	-10.2	-10.2	-10.7	-10.6	-10.7	-11.3	-10.1	-9.1	-7.9
-3.7	-3.0	-2.9	-2.2	-1.2	-1.2	-1.8	-1.8	-2.0	-2.7	-3.0	-3.3	-3.8	-3.1	-2.6	-3.2	-3.4	-3.7	-4.4	-4.4	-3.9	-3.9	-4.3	-4.1	-4.5	-5.1	-5.4	-5.2	-4.6	-4.8	-4.7	-3.8	-4.2	-4.2	-3.6	-3.2
-.7	.3	.3	-.2	.5	.6	.8	.5	-.3	.0	1.2	1.3	.7	.5	.6	.5	.9	.0	.7	.5	.6	.2	.1	.6	.7	.5	.9	.9	.9	.9	.8	.7	.1	-.5	-.6	-.4
1.5	1.6	2.0	2.1	2.2	2.7	2.6	1.4	1.0	1.3	1.5	1.8	2.3	2.2	2.7	3.0	3.1	3.4	4.0	4.0	3.6	3.5	3.4	3.1	2.9	3.0	3.3	3.3	2.9	2.8	2.6	2.4	1.9	1.7	1.3	.8
4.4	4.6	4.5	4.7	4.6	5.1	4.9	4.3	3.9	4.2	4.4	[illegible]	5.4	5.7	6.4	6.8	7.1	7.5	7.6	7.8	7.5	7.7	8.5	10.0	8.3	6.6	8.1	9.0	8.4	7.2	7.3	7.9	6.0	4.7	4.1	4.3
8.1	8.7	9.0	9.8	10.9	11.7	11.2	10.5	11.4	11.0	10.6	11.1	9.1	9.3	9.6	11.5	14.8	21.6	25.7	29.4	30.5	32.5	36.0	33.7	24.5	23.5	29.9	34.1	32.0	30.8	30.3	27.2	24.0	20.9	11.8	8.7
16.5	15.0	14.7	15.5	16.5	17.6	19.4	22.1	22.4	19.5	17.2	16.3	16.9	17.5	19.8	22.7	25.9	29.4	32.3	34.3	35.6	38.0	42.1	44.3	44.2	44.4	43.2	41.6	39.4	37.7	34.4	31.4	29.0	25.3	19.6	17.5

ATOVS : SD O-B BRIGHTNESS TEMPERATURE DIFFERENCES(DEG C)
SEPTEMBER 2000 : HIRS11 channel (500-700 hPa)
NOAA-15, USING ALL OBSERVATIONS

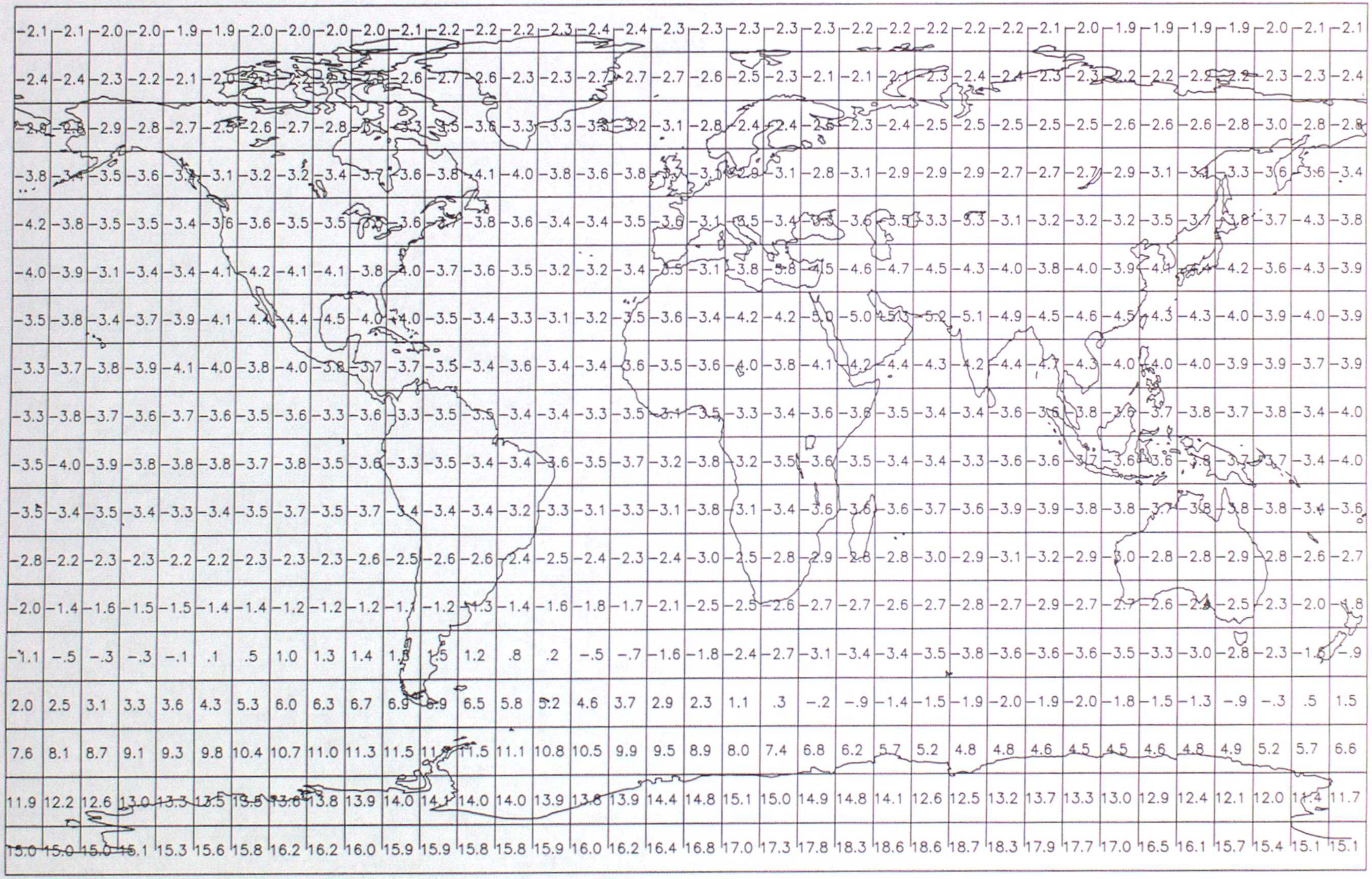
FIGURE 31



2.3	2.4	2.5	2.7	2.7	2.6	2.6	2.5	2.6	2.8	2.7	2.6	2.5	2.5	2.5	2.6	2.6	2.5	2.4	2.4	2.4	2.3	2.3	2.5	2.5	2.3	2.1	2.2	2.2	2.2	2.5	2.6	2.7	2.7	2.6	2.5
2.5	2.4	2.5	2.6	2.9	[illegible]	3.4	3.1	[illegible]	3.4	3.2	3.4	3.4	3.1	3.3	2.7	2.8	2.9	2.9	3.0	2.9	2.8	2.8	2.7	2.5	2.3	2.3	2.4	2.2	2.2	2.2	2.2	2.4	2.4	2.5	2.4
2.9	3.2	3.2	3.1	3.3	3.1	3.4	3.7	3.8	3.5	3.4	3.0	2.9	3.1	3.7	3.2	3.3	3.3	3.5	3.4	3.5	3.3	2.8	2.8	3.0	3.1	3.1	3.1	2.7	2.7	2.8	2.7	2.7	2.7	2.7	2.9
4.1	4.0	4.0	3.5	3.4	3.4	3.5	3.5	3.7	3.7	3.6	3.5	3.0	3.2	3.5	3.5	3.6	3.6	3.4	3.3	3.6	3.0	3.0	3.4	3.7	4.1	4.1	3.6	3.4	3.2	3.5	3.7	3.5	3.7	3.7	3.9
4.1	4.3	3.8	3.8	4.2	4.5	4.3	4.2	4.5	4.7	4.9	4.0	4.1	3.7	3.4	3.5	3.6	4.0	3.9	4.0	4.0	4.1	3.9	4.3	5.1	4.5	4.3	3.8	4.0	3.9	4.5	4.7	4.6	4.4	4.0	4.1
4.1	3.9	3.4	3.9	4.2	4.1	4.5	4.0	4.7	5.1	5.2	4.8	4.3	4.3	3.7	3.3	4.2	4.7	5.3	4.8	4.0	4.3	5.7	4.9	6.1	4.9	3.7	3.4	3.7	4.3	4.2	[illegible]	4.1	3.7	3.9	4.1
3.8	3.9	4.1	3.9	3.5	3.8	3.9	3.4	4.5	4.0	3.1	3.0	2.9	3.9	3.5	3.8	4.3	4.5	4.6	3.9	4.0	4.3	4.3	4.4	4.2	3.6	3.8	2.6	2.9	3.6	3.8	3.1	3.0	3.6	4.1	3.7
3.1	3.4	4.2	4.3	4.7	4.6	4.0	2.3	2.5	2.4	2.7	3.3	3.0	3.5	3.4	3.5	4.0	4.0	4.1	4.4	4.7	3.4	4.2	4.2	3.2	2.4	2.2	2.6	2.8	2.6	2.6	2.4	2.7	3.2	3.1	3.1
3.6	3.8	3.6	3.3	3.1	3.0	3.2	3.1	3.1	2.4	2.1	2.8	3.0	3.2	3.5	3.2	3.5	3.3	2.7	2.2	2.8	3.0	2.7	2.7	2.6	2.5	1.9	2.0	2.4	2.3	2.6	2.8	3.0	3.2	3.1	3.3
2.9	2.6	2.9	2.9	2.9	2.8	2.9	3.4	3.9	3.5	3.1	3.2	3.9	3.9	2.9	2.4	2.6	3.3	3.7	3.8	3.3	3.1	4.0	3.9	3.5	3.7	3.3	3.8	3.6	3.3	3.4	3.3	2.9	2.8	3.6	3.2
4.1	4.4	4.1	4.1	4.1	3.2	2.6	3.1	3.5	3.6	5.4	3.9	4.1	4.6	4.2	4.2	3.8	3.6	3.6	4.2	5.3	3.4	3.2	4.0	4.2	4.6	4.3	3.7	4.0	3.2	3.8	4.4	4.6	5.0	5.1	4.5
4.3	4.7	4.1	4.2	4.4	4.5	4.5	4.8	4.9	4.6	5.0	5.4	5.0	4.7	4.6	4.8	4.9	4.6	4.5	4.8	5.0	5.0	4.2	3.6	3.5	3.9	4.0	4.2	4.2	4.6	5.1	4.8	4.9	4.7	4.5	4.5
4.0	4.3	4.0	3.5	3.7	3.7	3.8	4.1	4.3	4.4	5.3	5.4	5.1	4.4	4.0	4.2	4.5	4.1	4.5	4.4	4.5	5.0	5.1	4.4	4.1	4.4	4.8	4.7	4.5	4.2	4.7	4.4	4.8	4.8	4.3	4.1
3.5	3.6	3.7	3.5	3.5	3.2	3.2	3.8	4.1	3.6	3.8	3.7	3.7	3.6	3.7	3.6	3.6	3.5	3.3	3.1	3.2	3.5	3.5	3.3	3.2	3.3	3.3	3.4	3.1	3.1	3.2	3.3	3.8	3.8	3.9	3.9
3.4	3.1	3.1	3.3	3.1	3.0	3.5	4.2	3.7	3.5	3.6	3.8	3.4	3.2	3.1	3.3	3.2	3.2	3.2	3.0	3.0	2.9	2.8	3.0	3.0	3.1	3.0	2.7	2.8	2.9	3.0	3.1	3.2	3.4	3.4	3.7
3.3	3.3	3.4	3.3	3.2	2.9	3.1	3.1	3.2	3.1	3.3	3.9	3.1	3.0	2.9	3.1	3.4	3.2	2.7	2.3	2.4	2.5	4.5	6.6	4.9	2.7	4.4	5.5	6.0	4.9	5.2	6.0	4.6	4.0	3.6	3.4
2.9	2.6	3.4	4.7	5.8	6.1	5.9	5.9	6.0	5.3	4.4	4.0	3.0	3.2	3.3	4.8	6.3	8.0	9.1	10.5	11.9	11.6	10.2	7.0	9.0	9.6	8.8	9.4	9.1	9.0	8.0	6.0	6.2	6.0	5.4	3.1
8.4	7.4	7.5	7.5	7.7	7.4	7.1	6.5	5.5	5.3	5.7	6.2	6.6	6.7	6.8	6.2	5.9	5.3	4.8	4.5	4.1	4.4	5.4	5.5	5.7	5.9	5.5	4.9	4.6	4.6	4.9	5.5	6.1	7.4	9.1	8.8

ATOVS : MEAN O–B BRIGHTNESS TEMPERATURE DIFFERENCES (DEG C)
SEPTEMBER 2000 : HIRS4 channel (400 hPa)
NOAA–15, USING ALL OBSERVATIONS

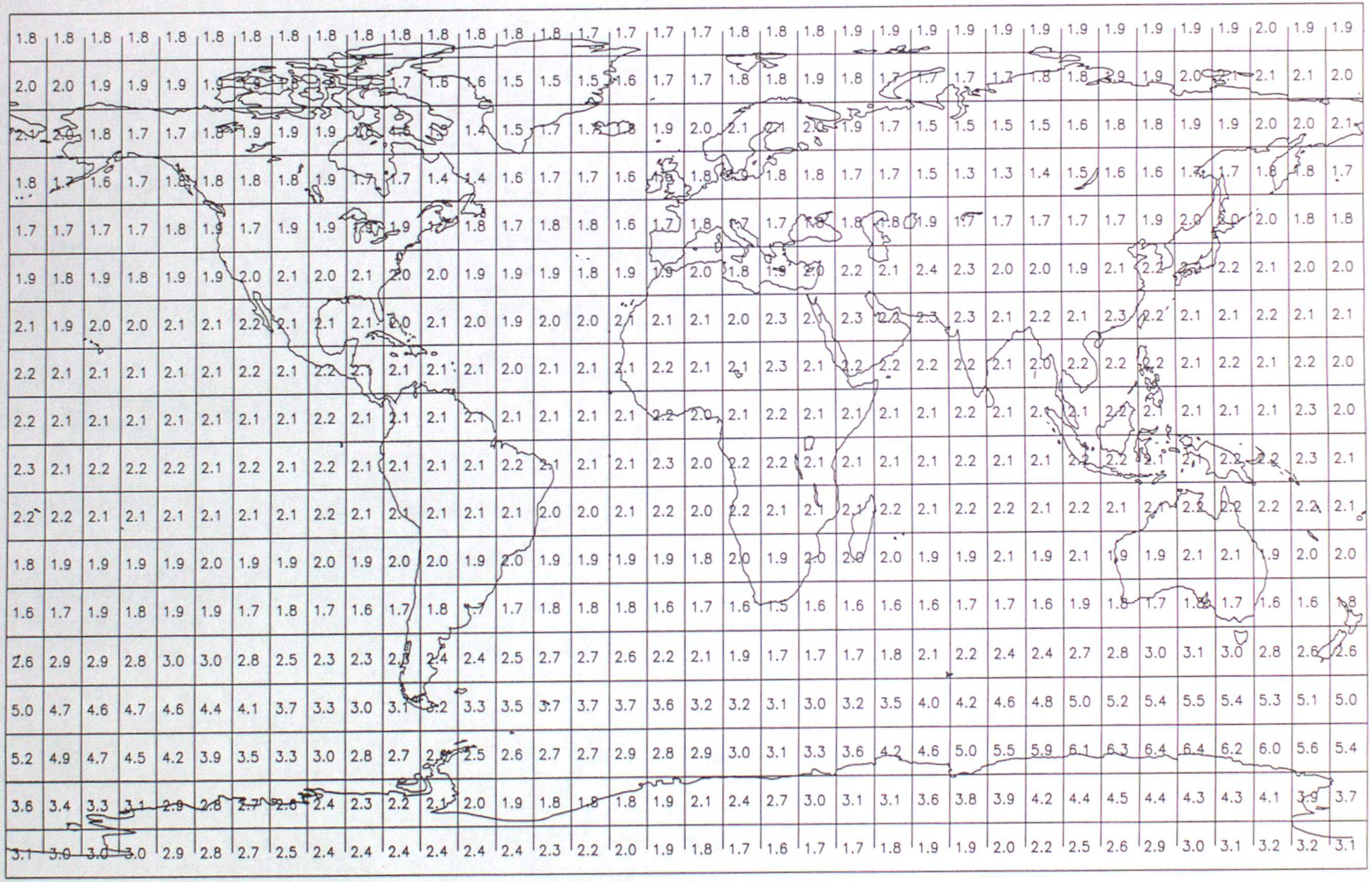
FIGURE 32



-2.1	-2.1	-2.0	-2.0	-1.9	-1.9	-2.0	-2.0	-2.0	-2.0	-2.1	-2.2	-2.2	-2.2	-2.3	-2.4	-2.4	-2.3	-2.3	-2.3	-2.3	-2.3	-2.2	-2.2	-2.2	-2.2	-2.2	-2.1	-2.0	-1.9	-1.9	-1.9	-1.9	-2.0	-2.1	-2.1
-2.4	-2.4	-2.3	-2.2	-2.1	-2.0	-2.1	-2.2	[illegible]	-2.5	-2.6	-2.7	-2.6	-2.3	-2.3	-2.7	-2.7	-2.7	-2.6	-2.5	-2.3	-2.1	-2.1	-2.1	-2.3	-2.4	-2.4	-2.3	-2.3	-2.2	-2.2	-2.2	-2.2	-2.3	-2.3	-2.4
-2.8	-2.8	-2.9	-2.8	-2.7	-2.5	-2.6	-2.7	-2.8	-3.1	-3.3	-3.5	-3.6	-3.3	-3.3	-3.3	-3.2	-3.1	-2.8	-2.4	-2.4	-2.5	-2.3	-2.4	-2.5	-2.5	-2.5	-2.5	-2.5	-2.6	-2.6	-2.6	-2.8	-3.0	-2.8	-2.8
-3.8	-3.4	-3.5	-3.6	-3.4	-3.1	-3.2	-3.2	-3.4	-3.7	-3.6	-3.8	-4.1	-4.0	-3.8	-3.6	-3.8	-3.7	-3.1	-2.9	-3.1	-2.8	-3.1	-2.9	-2.9	-2.9	-2.7	-2.7	-2.7	-2.9	-3.1	-3.4	-3.3	-3.6	-3.6	-3.4
-4.2	-3.8	-3.5	-3.5	-3.4	-3.6	-3.6	-3.5	-3.5	[illegible]	-3.6	-3.7	-3.8	-3.6	-3.4	-3.4	-3.5	-3.6	-3.1	-3.5	-3.4	-3.3	-3.6	-3.5	-3.3	-3.3	-3.1	-3.2	-3.2	-3.2	-3.5	-3.7	-3.8	-3.7	-4.3	-3.8
-4.0	-3.9	-3.1	-3.4	-3.4	-4.1	-4.2	-4.1	-4.1	-3.8	-4.0	-3.7	-3.6	-3.5	-3.2	-3.2	-3.4	-3.5	-3.1	-3.8	-5.8	-4.5	-4.6	-4.7	-4.5	-4.3	-4.0	-3.8	-4.0	-3.9	-4.1	-4.4	-4.2	-3.6	-4.3	-3.9
-3.5	-3.8	-3.4	-3.7	-3.9	-4.1	-4.4	-4.4	-4.5	-4.0	-4.0	-3.5	-3.4	-3.3	-3.1	-3.2	-3.5	-3.6	-3.4	-4.2	-4.2	-5.0	-5.0	-5.3	-5.2	-5.1	-4.9	-4.5	-4.6	-4.5	-4.3	-4.3	-4.0	-3.9	-4.0	-3.9
-3.3	-3.7	-3.8	-3.9	-4.1	-4.0	-3.8	-4.0	-3.8	-3.7	-3.7	-3.5	-3.4	-3.6	-3.4	-3.4	-3.6	-3.5	-3.6	-4.0	-3.8	-4.1	-4.2	-4.4	-4.3	-4.2	-4.4	-4.7	-4.3	-4.0	-4.0	-4.0	-3.9	-3.9	-3.7	-3.9
-3.3	-3.8	-3.7	-3.6	-3.7	-3.6	-3.5	-3.6	-3.3	-3.6	-3.3	-3.5	-3.5	-3.4	-3.4	-3.3	-3.5	-3.1	-3.5	-3.3	-3.4	-3.6	-3.6	-3.5	-3.4	-3.4	-3.6	-3.6	-3.8	-3.6	-3.7	-3.8	-3.7	-3.8	-3.4	-4.0
-3.5	-4.0	-3.9	-3.8	-3.8	-3.8	-3.7	-3.8	-3.5	-3.6	-3.3	-3.5	-3.4	-3.4	-3.6	-3.5	-3.7	-3.2	-3.8	-3.2	-3.5	-3.6	-3.5	-3.4	-3.4	-3.3	-3.6	-3.6	-3.7	-3.6	-3.6	-3.8	-3.7	-3.7	-3.4	-4.0
-3.5	-3.4	-3.5	-3.4	-3.3	-3.4	-3.5	-3.7	-3.5	-3.7	-3.4	-3.4	-3.4	-3.2	-3.3	-3.1	-3.3	-3.1	-3.8	-3.1	-3.4	-3.6	-3.6	-3.6	-3.7	-3.6	-3.9	-3.9	-3.8	-3.8	-3.7	-3.8	-3.8	-3.8	-3.4	-3.6
-2.8	-2.2	-2.3	-2.3	-2.2	-2.2	-2.3	-2.3	-2.3	-2.6	-2.5	-2.6	-2.6	-2.4	-2.5	-2.4	-2.3	-2.4	-3.0	-2.5	-2.8	-2.9	-2.8	-2.8	-3.0	-2.9	-3.1	-3.2	-2.9	-3.0	-2.8	-2.8	-2.9	-2.8	-2.6	-2.7
-2.0	-1.4	-1.6	-1.5	-1.5	-1.4	-1.4	-1.2	-1.2	-1.2	-1.1	-1.2	-1.3	-1.4	-1.6	-1.8	-1.7	-2.1	-2.5	-2.5	-2.6	-2.7	-2.7	-2.6	-2.7	-2.8	-2.7	-2.9	-2.7	-2.7	-2.6	[illegible]	-2.5	-2.3	-2.0	-1.8
-1.1	-.5	-.3	-.3	-.1	.1	.5	1.0	1.3	1.4	1.5	1.5	1.2	.8	.2	-.5	-.7	-1.6	-1.8	-2.4	-2.7	-3.1	-3.4	-3.4	-3.5	-3.8	-3.6	-3.6	-3.6	-3.5	-3.3	-3.0	-2.8	-2.3	-1.5	-.9
2.0	2.5	3.1	3.3	3.6	4.3	5.3	6.0	6.3	6.7	6.9	6.9	6.5	5.8	5.2	4.6	3.7	2.9	2.3	1.1	.3	-.2	-.9	-1.4	-1.5	-1.9	-2.0	-1.9	-2.0	-1.8	-1.5	-1.3	-.9	-.3	.5	1.5
7.6	8.1	8.7	9.1	9.3	9.8	10.4	10.7	11.0	11.3	11.5	[illegible]	11.5	11.1	10.8	10.5	9.9	9.5	8.9	8.0	7.4	6.8	6.2	5.7	5.2	4.8	4.8	4.6	4.5	4.5	4.6	4.8	4.9	5.2	5.7	6.6
11.9	12.2	12.6	13.0	13.3	13.5	13.5	13.6	13.8	13.9	14.0	14.1	14.0	14.0	13.9	13.8	13.9	14.4	14.8	15.1	15.0	14.9	14.8	14.1	12.6	12.5	13.2	13.7	13.3	13.0	12.9	12.4	12.1	12.0	11.4	11.7
15.0	15.0	15.0	15.1	15.3	15.6	15.8	16.2	16.2	16.0	15.9	15.9	15.8	15.8	15.9	16.0	16.2	16.4	16.8	17.0	17.3	17.8	18.3	18.6	18.6	18.7	18.3	17.9	17.7	17.0	16.5	16.1	15.7	15.4	15.1	15.1

ATOVS : SD O-B BRIGHTNESS TEMPERATURE DIFFERENCES(DEG C)
SEPTEMBER 2000 : HIRS4 channel (400 hPa)
NOAA-15, USING ALL OBSERVATIONS

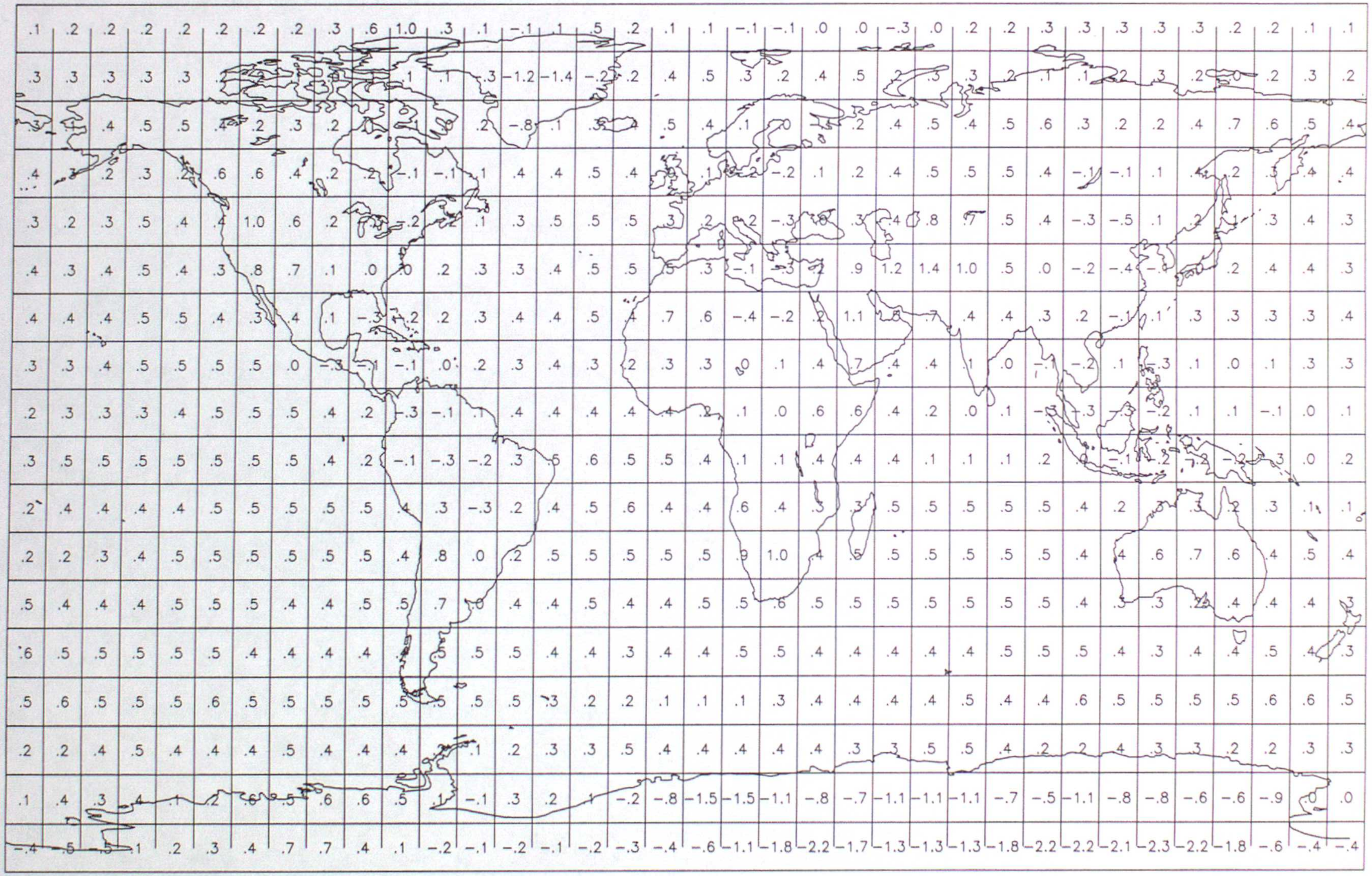
FIGURE 33



1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.7	1.7	1.7	1.7	1.8	1.8	1.8	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	2.0	1.9	1.9
2.0	2.0	1.9	1.9	1.9	1.9	1.9	1.8	1.8	1.7	1.7	1.6	1.6	1.5	1.5	1.5	1.6	1.7	1.7	1.8	1.8	1.9	1.8	1.7	1.7	1.7	1.7	1.8	1.8	1.9	1.9	2.0	2.1	2.1	2.1	2.0
2.1	2.0	1.8	1.7	1.7	1.8	1.9	1.9	1.9	1.6	1.6	1.5	1.4	1.5	1.7	1.7	1.8	1.9	2.0	2.1	2.1	2.0	1.9	1.7	1.5	1.5	1.5	1.5	1.6	1.8	1.8	1.9	1.9	2.0	2.0	2.1
1.8	1.7	1.6	1.7	1.8	1.8	1.8	1.8	1.9	1.7	1.7	1.4	1.4	1.6	1.7	1.7	1.6	1.8	1.8	1.9	1.8	1.8	1.7	1.7	1.5	1.3	1.3	1.4	1.5	1.6	1.6	1.7	1.7	1.8	1.8	1.7
1.7	1.7	1.7	1.7	1.8	1.9	1.7	1.9	1.9	1.9	1.9	1.7	1.8	1.7	1.8	1.8	1.6	1.7	1.8	1.7	1.7	1.8	1.8	1.8	1.9	1.7	1.7	1.7	1.7	1.7	1.9	2.0	2.0	2.0	1.8	1.8
1.9	1.8	1.9	1.8	1.9	1.9	2.0	2.1	2.0	2.1	2.0	2.0	1.9	1.9	1.9	1.8	1.9	1.9	2.0	1.8	1.9	2.0	2.2	2.1	2.4	2.3	2.0	2.0	1.9	2.1	2.2	2.2	2.2	2.1	2.0	2.0
2.1	1.9	2.0	2.0	2.1	2.1	2.2	2.1	2.1	2.1	2.0	2.1	2.0	1.9	2.0	2.0	2.1	2.1	2.1	2.0	2.3	2.1	2.3	2.2	2.3	2.3	2.1	2.2	2.1	2.3	2.2	2.1	2.1	2.2	2.1	2.1
2.2	2.1	2.1	2.1	2.1	2.1	2.2	2.1	2.2	2.1	2.1	2.1	2.1	2.0	2.1	2.1	2.1	2.2	2.1	2.1	2.3	2.1	2.2	2.2	2.2	2.2	2.1	2.0	2.2	2.2	2.2	2.1	2.2	2.1	2.2	2.0
2.2	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.2	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.2	2.0	2.1	2.2	2.1	2.1	2.1	2.1	2.2	2.1	2.1	2.1	2.2	2.1	2.1	2.1	2.1	2.3	2.0
2.3	2.1	2.2	2.2	2.2	2.1	2.2	2.1	2.2	2.1	2.1	2.1	2.1	2.2	2.1	2.1	2.1	2.3	2.0	2.2	2.2	2.1	2.1	2.1	2.1	2.2	2.1	2.1	2.2	2.2	2.1	2.1	2.2	2.2	2.3	2.1
2.2	2.2	2.1	2.1	2.1	2.1	2.1	2.1	2.2	2.1	2.1	2.1	2.1	2.1	2.0	2.0	2.1	2.2	2.0	2.2	2.1	2.1	2.1	2.2	2.1	2.2	2.2	2.1	2.2	2.1	2.1	2.2	2.2	2.2	2.2	2.1
1.8	1.9	1.9	1.9	1.9	2.0	1.9	1.9	2.0	1.9	2.0	2.0	1.9	2.0	1.9	1.9	1.9	1.9	1.8	2.0	1.9	2.0	2.0	2.0	1.9	1.9	2.1	1.9	2.1	1.9	1.9	2.1	2.1	1.9	2.0	2.0
1.6	1.7	1.9	1.8	1.9	1.9	1.7	1.8	1.7	1.6	1.7	1.8	1.7	1.7	1.8	1.8	1.8	1.6	1.7	1.6	1.5	1.6	1.6	1.6	1.6	1.7	1.7	1.6	1.9	1.8	1.7	1.8	1.7	1.6	1.6	1.8
2.6	2.9	2.9	2.8	3.0	3.0	2.8	2.5	2.3	2.3	2.3	2.4	2.4	2.5	2.7	2.7	2.6	2.2	2.1	1.9	1.7	1.7	1.7	1.8	2.1	2.2	2.4	2.4	2.7	2.8	3.0	3.1	3.0	2.8	2.6	2.6
5.0	4.7	4.6	4.7	4.6	4.4	4.1	3.7	3.3	3.0	3.1	3.2	3.3	3.5	3.7	3.7	3.7	3.6	3.2	3.2	3.1	3.0	3.2	3.5	4.0	4.2	4.6	4.8	5.0	5.2	5.4	5.5	5.4	5.3	5.1	5.0
5.2	4.9	4.7	4.5	4.2	3.9	3.5	3.3	3.0	2.8	2.7	2.8	2.5	2.6	2.7	2.7	2.9	2.8	2.9	3.0	3.1	3.3	3.6	4.2	4.6	5.0	5.5	5.9	6.1	6.3	6.4	6.4	6.2	6.0	5.6	5.4
3.6	3.4	3.3	3.1	2.9	2.8	2.7	2.6	2.4	2.3	2.2	2.1	2.0	1.9	1.8	1.8	1.8	1.9	2.1	2.4	2.7	3.0	3.1	3.1	3.6	3.8	3.9	4.2	4.4	4.5	4.4	4.3	4.3	4.1	3.9	3.7
3.1	3.0	3.0	3.0	2.9	2.8	2.7	2.5	2.4	2.4	2.4	2.4	2.4	2.4	2.3	2.2	2.0	1.9	1.8	1.7	1.6	1.7	1.7	1.8	1.9	1.9	2.0	2.2	2.5	2.6	2.9	3.0	3.1	3.2	3.2	3.1

ATOVS : MEAN O-B BRIGHTNESS TEMPERATURE DIFFERENCES (DEG C)
SEPTEMBER 2000 : AMSUA-5 Channel (700 hPa)
NOAA-15, USING ALL OBSERVATIONS

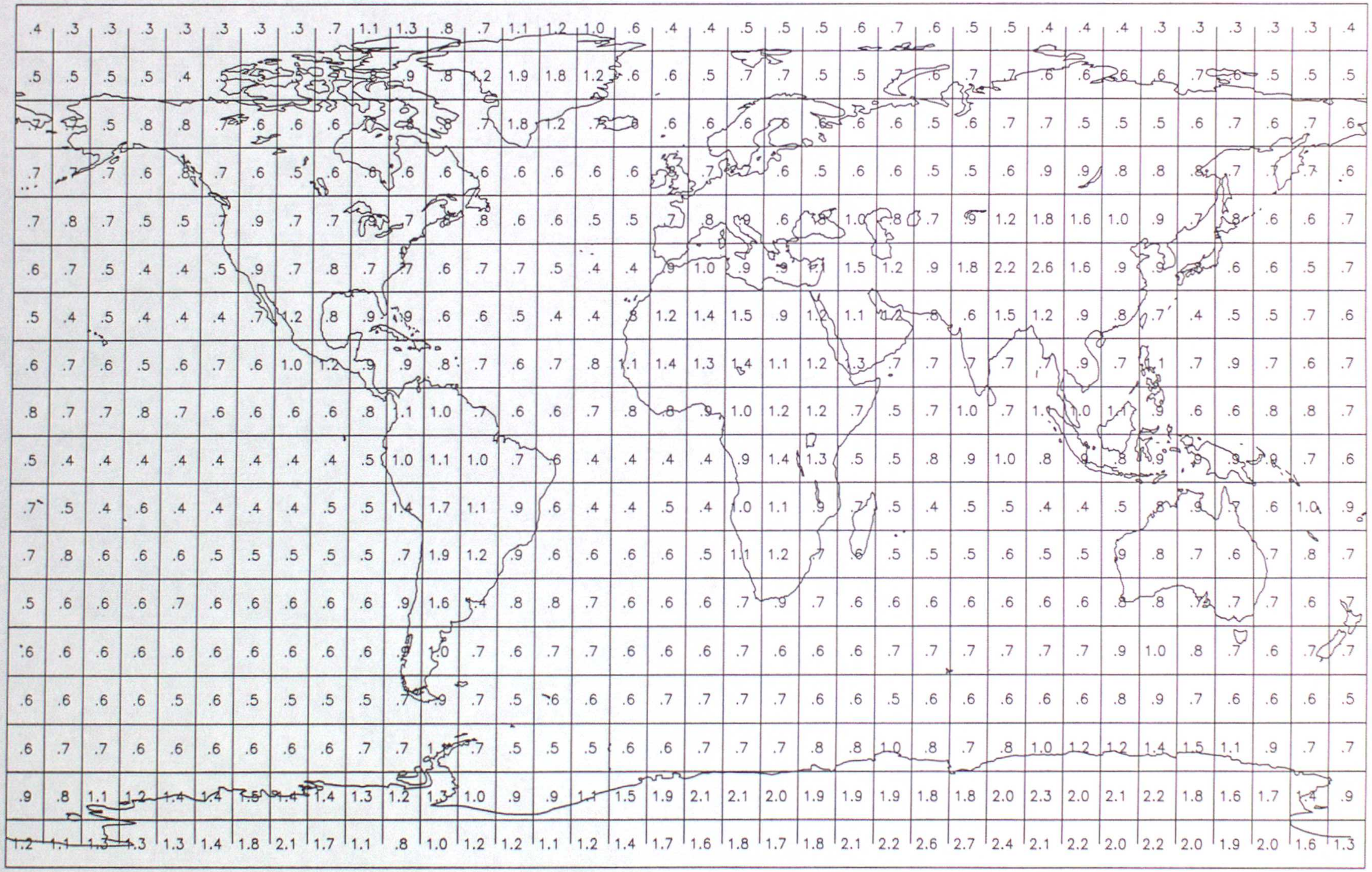
FIGURE 34



.1	.2	.2	.2	.2	.2	.2	.2	.3	.6	1.0	.3	.1	-.1	.1	.5	.2	.1	.1	-.1	-.1	.0	.0	-.3	.0	.2	.2	.3	.3	.3	.3	.3	.2	.2	.1	.1
.3	.3	.3	.3	.3	.2					.1	.1	.3	-1.2	-1.4	-.2	.2	.4	.5	.3	.2	.4	.5	.2	.3	.3	.2	.1	.1	.2	.3	.2	.0	.2	.3	.2
.3	.1	.4	.5	.5	.4	.2	.3	.2		.1	[illegible]	.2	-.8	.1	.3	.4	.5	.4	.1	.0	-.5	.2	.4	.5	.4	.5	.6	.3	.2	.2	.4	.7	.6	.5	.4
.4	.3	.2	.3	.2	.6	.6	.4	.2	.2	-.1	-.1	.1	.4	.4	.5	.4	[illegible]	.1	-.2	-.2	.1	.2	.4	.5	.5	.5	.4	-.1	-.1	.1	.4	.2	.3	.4	.4
.3	.2	.3	.5	.4	.4	1.0	.6	.2	[illegible]	-.2	.2	.1	.3	.5	.5	.5	.3	.2	.2	-.3	.0	.3	.4	.8	.7	.5	.4	-.3	-.5	.1	.2	.1	.3	.4	.3
.4	.3	.4	.5	.4	.3	.8	.7	.1	.0	.0	.2	.3	.3	.4	.5	.5	.5	.3	-.1	-.3	.2	.9	1.2	1.4	1.0	.5	.0	-.2	-.4	[illegible]		.2	.4	.4	.3
.4	.4	.4	.5	.5	.4	.3	.4	.1	-.3	.2	.2	.3	.4	.4	.5	.4	.7	.6	-.4	-.2	.2	1.1	.8	.7	.4	.4	.3	.2	-.1	.1	.3	.3	.3	.3	.4
.3	.3	.4	.5	.5	.5	.5	.0	-.3	-.1	-.1	.0	.2	.3	.4	.3	.2	.3	.3	.0	.1	.4	.7	.4	.4	.1	.0	-.1	-.2	.1	-.3	.1	.0	.1	.3	.3
.2	.3	.3	.3	.4	.5	.5	.5	.4	.2	-.3	-.1	.1	.4	.4	.4	.4	.4	.2	.1	.0	.6	.6	.4	.2	.0	.1	-.3	-.3	-.3	-.2	.1	.1	-.1	.0	.1
.3	.5	.5	.5	.5	.5	.5	.5	.4	.2	-.1	-.3	-.2	.3	.5	.6	.5	.5	.4	.1	.1	.4	.4	.4	.1	.1	.1	.2	.0	-.1	-.2	.2	-.2	.3	.0	.2
.2	.4	.4	.4	.4	.5	.5	.5	.5	.5	.4	.3	-.3	.2	.4	.5	.6	.4	.4	.6	.4	.3	.3	.5	.5	.5	.5	.5	.4	.2	.3	.3	.2	.3	.1	.1
.2	.2	.3	.4	.5	.5	.5	.5	.5	.5	.4	.8	.0	.2	.5	.5	.5	.5	.5	.9	1.0	.4	.5	.5	.5	.5	.5	.5	.4	.4	.6	.7	.6	.4	.5	.4
.5	.4	.4	.4	.5	.5	.5	.4	.4	.5	.5	.7	.0	.4	.4	.5	.4	.4	.5	.5	.6	.5	.5	.5	.5	.5	.5	.5	.4	.3	.3	.2	.4	.4	.4	.3
.6	.5	.5	.5	.5	.5	.4	.4	.4	.4	.4	.5	.5	.5	.4	.4	.3	.4	.4	.5	.5	.4	.4	.4	.4	.4	.5	.5	.5	.4	.3	.4	.4	.5	.4	.3
.5	.6	.5	.5	.5	.6	.5	.5	.5	.5	.5	.5	.5	.5	.3	.2	.2	.1	.1	.1	.3	.4	.4	.4	.4	.5	.4	.4	.6	.5	.5	.5	.5	.6	.6	.5
.2	.2	.4	.5	.4	.4	.4	.5	.4	.4	.4	.2	.1	.2	.3	.3	.5	.4	.4	.4	.4	.4	.3	.3	.5	.5	.4	.2	.2	.4	.3	.3	.2	.2	.3	.3
.1	.4	.3	.4	.1	.2	.6	.5	.6	.6	.5	.1	-.1	.3	.2	.1	-.2	-.8	-1.5	-1.5	-1.1	-.8	-.7	-1.1	-1.1	-1.1	-.7	-.5	-1.1	-.8	-.8	-.6	-.6	-.9	.0	.0
-.4	-.5	-.5	.1	.2	.3	.4	.7	.7	.4	.1	-.2	-.1	-.2	-.1	-.2	-.3	-.4	-.6	-1.1	-1.8	-2.2	-1.7	-1.3	-1.3	-1.3	-1.8	-2.2	-2.2	-2.1	-2.3	-2.2	-1.8	-.6	-.4	-.4

ATOVS : SD O-B BRIGHTNESS TEMPERATURE DIFFERENCES(DEG C)
SEPTEMBER 2000 : AMSUA-5 channel (700 hPa)
NOAA-15, USING ALL OBSERVATIONS

FIGURE 35



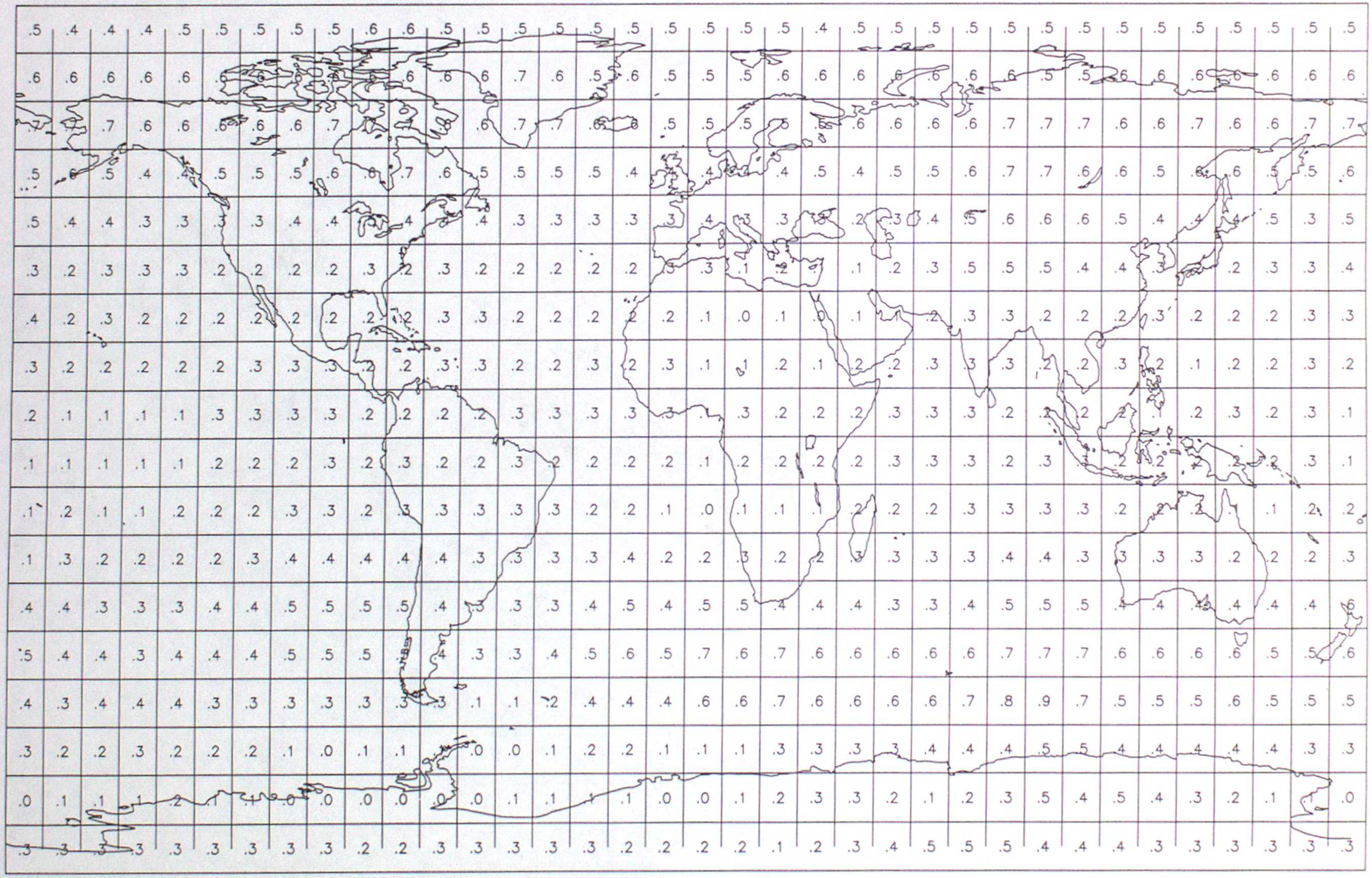
.4	.3	.3	.3	.3	.3	.3	.3	.7	1.1	1.3	.8	.7	1.1	1.2	1.0	.6	.4	.4	.5	.5	.5	.6	.7	.6	.5	.5	.4	.4	.4	.3	.3	.3	.3	.3	.4
.5	.5	.5	.5	.4	.5	.5	.5	.3	.8	.9	.8	1.2	1.9	1.8	1.2	.6	.6	.5	.7	.7	.5	.5	.7	.6	.7	.7	.6	.6	.6	.6	.7	.6	.5	.5	.5
.7	.7	.5	.8	.8	.7	.6	.6	.6	.7	.8	.8	.7	1.8	1.2	.7	.8	.6	.6	.6	.6	.6	.6	.6	.5	.6	.7	.7	.5	.5	.5	.6	.7	.6	.7	.6
.7	.7	.7	.6	.8	.7	.6	.5	.6	.8	.6	.6	.6	.6	.6	.6	.6	.8	.7	.7	.6	.5	.6	.6	.5	.5	.6	.9	.9	.8	.8	.8	.7	.7	.7	.6
.7	.8	.7	.5	.5	.7	.9	.7	.7	.9	.7	.8	.8	.6	.6	.5	.5	.7	.8	.9	.6	.8	1.0	.8	.7	.9	1.2	1.8	1.6	1.0	.9	.7	.8	.6	.6	.7
.6	.7	.5	.4	.4	.5	.9	.7	.8	.7	.7	.6	.7	.7	.5	.4	.4	.9	1.0	.9	.9	1.1	1.5	1.2	.9	1.8	2.2	2.6	1.6	.9	.9	.8	.6	.6	.5	.7
.5	.4	.5	.4	.4	.4	.7	1.2	.8	.9	.9	.6	.6	.5	.4	.4	.8	1.2	1.4	1.5	.9	1.2	1.1	1.2	.8	.6	1.5	1.2	.9	.8	.7	.4	.5	.5	.7	.6
.6	.7	.6	.5	.6	.7	.6	1.0	1.2	.9	.9	.8	.7	.6	.7	.8	1.1	1.4	1.3	1.4	1.1	1.2	1.3	.7	.7	.7	.7	.7	.9	.7	1.1	.7	.9	.7	.6	.7
.8	.7	.7	.8	.7	.6	.6	.6	.6	.8	1.1	1.0	.7	.6	.6	.7	.8	.8	.9	1.0	1.2	1.2	.7	.5	.7	1.0	.7	1.1	1.0	1.1	.9	.6	.6	.8	.8	.7
.5	.4	.4	.4	.4	.4	.4	.4	.4	.5	1.0	1.1	1.0	.7	.6	.4	.4	.4	.4	.9	1.4	1.3	.5	.5	.8	.9	1.0	.8	.9	.8	.9	.9	.9	.9	.7	.6
.7	.5	.4	.6	.4	.4	.4	.4	.5	.5	1.4	1.7	1.1	.9	.6	.4	.4	.5	.4	1.0	1.1	.9	.7	.5	.4	.5	.5	.4	.4	.5	.8	.9	.7	.6	1.0	.9
.7	.8	.6	.6	.6	.5	.5	.5	.5	.5	.7	1.9	1.2	.9	.6	.6	.6	.6	.5	1.1	1.2	.7	.6	.5	.5	.5	.6	.5	.5	.9	.8	.7	.6	.7	.8	.7
.5	.6	.6	.6	.7	.6	.6	.6	.6	.6	.9	1.6	1.4	.8	.8	.7	.6	.6	.6	.7	.9	.7	.6	.6	.6	.6	.6	.6	.6	.8	.8	.7	.7	.7	.6	.7
.6	.6	.6	.6	.6	.6	.6	.6	.6	.6	.9	1.0	.7	.6	.7	.7	.6	.6	.6	.7	.6	.6	.6	.7	.7	.7	.7	.7	.7	.9	1.0	.8	.7	.6	.7	.7
.6	.6	.6	.6	.5	.6	.5	.5	.5	.5	.7	.9	.7	.5	.6	.6	.6	.7	.7	.7	.7	.6	.6	.5	.6	.6	.6	.6	.6	.8	.9	.7	.6	.6	.6	.5
.6	.7	.7	.6	.6	.6	.6	.6	.6	.7	.7	1.3	.7	.5	.5	.5	.6	.6	.7	.7	.7	.8	.8	1.0	.8	.7	.8	1.0	1.2	1.2	1.4	1.5	1.1	.9	.7	.7
.9	.8	1.1	1.2	1.4	1.4	1.5	1.4	1.4	1.3	1.2	1.3	1.0	.9	.9	1.1	1.5	1.9	2.1	2.1	2.0	1.9	1.9	1.9	1.8	1.8	2.0	2.3	2.0	2.1	2.2	1.8	1.6	1.7	1.4	.9
1.2	1.1	1.3	1.3	1.3	1.4	1.8	2.1	1.7	1.1	.8	1.0	1.2	1.2	1.1	1.2	1.4	1.7	1.6	1.8	1.7	1.8	2.1	2.2	2.6	2.7	2.4	2.1	2.2	2.0	2.2	2.0	1.9	2.0	1.6	1.3

ATOVS : MEAN O-B BRIGHTNESS TEMPERATURE DIFFERENCES (DEG C)

SEPTEMBER 2000 : AMSUA-7 Channel (300 hPa)

NOAA-15, USING ALL OBSERVATIONS

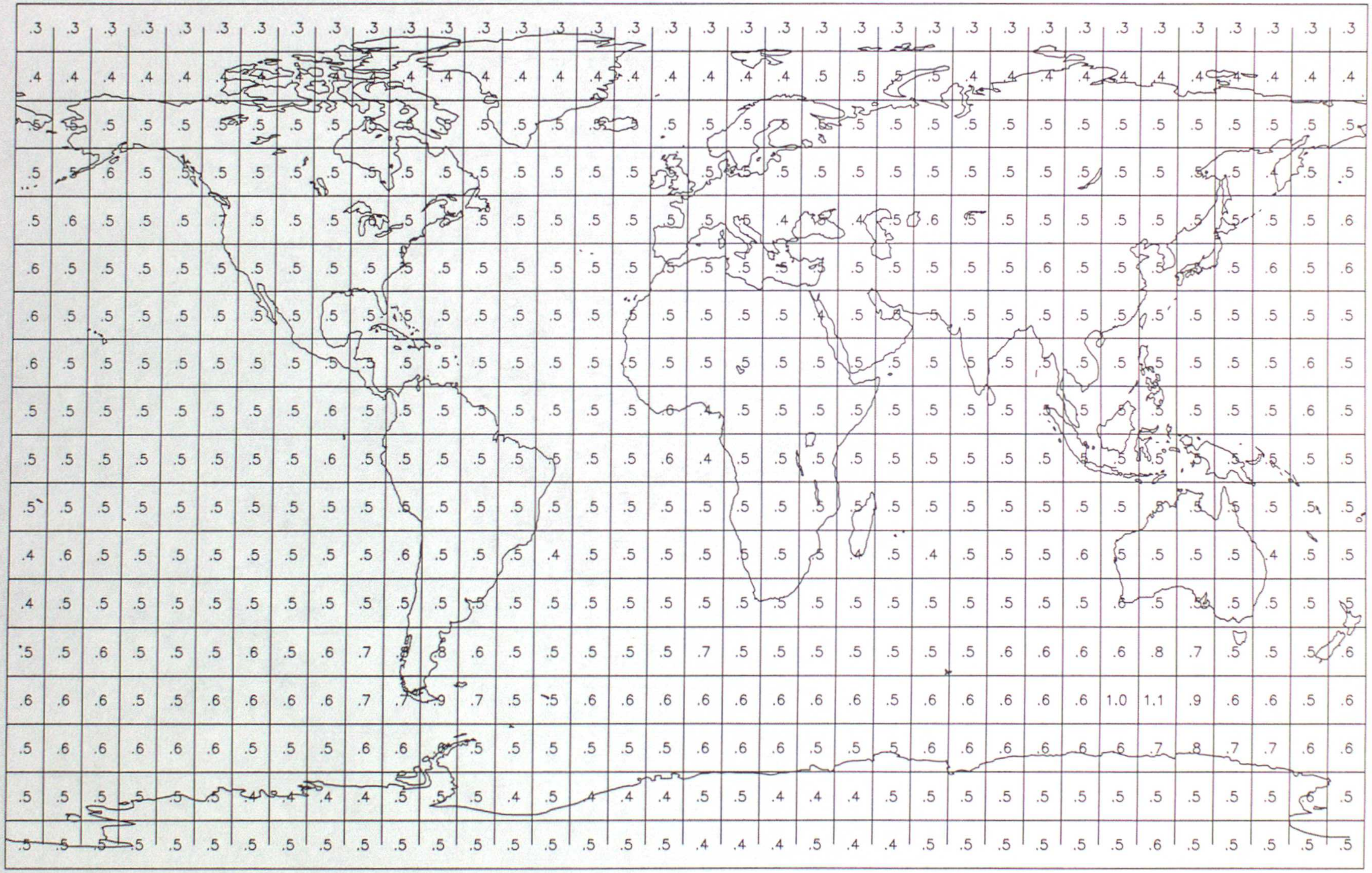
FIGURE 36



.5	.4	.4	.4	.5	.5	.5	.5	.5	.6	.6	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.4	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5
.6	.6	.6	.6	.6	.6	.6	.6	.6	.6	.6	.6	.6	.7	.6	.5	.6	.5	.5	.5	.6	.6	.6	.6	.6	.6	.6	.5	.5	.6	.6	.6	.6	.6	.6	.6
.7	.7	.7	.6	.6	.6	.6	.6	.7	.7	.7	.8	.6	.7	.7	.6	.6	.5	.5	.5	.5	.5	.6	.6	.6	.6	.7	.7	.7	.6	.6	.7	.6	.6	.7	.7
.5	.6	.5	.4	.4	.5	.5	.5	.6	.6	.7	.6	.5	.5	.5	.5	.4		.4	.4	.4	.5	.4	.5	.5	.6	.7	.7	.6	.6	.5	.6	.6	.5	.5	.6
.5	.4	.4	.3	.3	.3	.3	.4	.4		.4		.4	.3	.3	.3	.3	.3	.4	.3	.3	.3	.2	.3	.4	.5	.6	.6	.6	.5	.4	.4	.4	.5	.3	.5
.3	.2	.3	.3	.3	.2	.2	.2	.2	.3	.2	.3	.2	.2	.2	.2	.2	.3	.3	.1	.2		.1	.2	.3	.5	.5	.5	.4	.4	.3		.2	.3	.3	.4
.4	.2	.3	.2	.2	.2	.2	.2	.2	.2	.2	.3	.3	.2	.2	.2	.2	.2	.1	.0	.1	.0	.1	.1	.2	.3	.3	.2	.2	.2	.3	.2	.2	.2	.3	.3
.3	.2	.2	.2	.2	.2	.3	.3	.3	.2	.2	.3	.3	.2	.2	.3	.2	.3	.1	.1	.2	.1	.2	.2	.3	.3	.3	.2	.2	.3	.2	.1	.2	.2	.3	.2
.2	.1	.1	.1	.1	.3	.3	.3	.3	.2	.2	.2	.2	.3	.3	.3	.3	.3	.1	.3	.2	.2	.2	.3	.3	.3	.2	.2	.2	.2	.1	.2	.3	.2	.3	.1
.1	.1	.1	.1	.1	.2	.2	.2	.3	.2	.3	.2	.2	.3	.2	.2	.2	.2	.1	.2	.2	.2	.2	.3	.3	.3	.2	.3	.3	.2	.2	.2	.2	.2	.3	.1
.1	.2	.1	.1	.2	.2	.2	.3	.3	.2	.3	.3	.3	.3	.3	.2	.2	.1	.0	.1	.1	.1	.2	.2	.2	.3	.3	.3	.3	.2	.2	.2	.1	.1	.2	.2
.1	.3	.2	.2	.2	.2	.3	.4	.4	.4	.4	.4	.3	.3	.3	.3	.4	.2	.2	.3	.2	.2	.3	.3	.3	.3	.4	.4	.3	.3	.3	.3	.2	.2	.2	.3
.4	.4	.3	.3	.3	.4	.4	.5	.5	.5	.5	.4	.3	.3	.3	.4	.5	.4	.5	.5	.4	.4	.4	.3	.3	.4	.5	.5	.5	.4	.4	.4	.4	.4	.4	.6
.5	.4	.4	.3	.4	.4	.4	.5	.5	.5	.5	.4	.3	.3	.4	.5	.6	.5	.7	.6	.7	.6	.6	.6	.6	.6	.6	.7	.7	.7	.6	.6	.6	.6	.5	.5	.6
.4	.3	.4	.4	.4	.3	.3	.3	.3	.3	.3	.3	.1	.1	.2	.4	.4	.4	.6	.6	.7	.6	.6	.6	.6	.7	.8	.9	.7	.5	.5	.5	.6	.5	.5	.5
.3	.2	.2	.3	.2	.2	.2	.1	.0	.1	.1		.0	.0	.1	.2	.2	.1	.1	.1	.3	.3	.3	.3	.4	.4	.4	.5	.5	.4	.4	.4	.4	.4	.3	.3
.0	.1	.1	.1	.2	.1	.1	.0	.0	.0	.0	.0	.0	.1	.1	.1	.1	.0	.0	.1	.2	.3	.3	.2	.1	.2	.3	.5	.4	.5	.4	.3	.2	.1	.1	.0
.3	.3	.3	.3	.3	.3	.3	.3	.3	.2	.2	.3	.3	.3	.3	.3	.2	.2	.2	.2	.1	.2	.3	.4	.5	.5	.5	.4	.4	.4	.3	.3	.3	.3	.3	.3

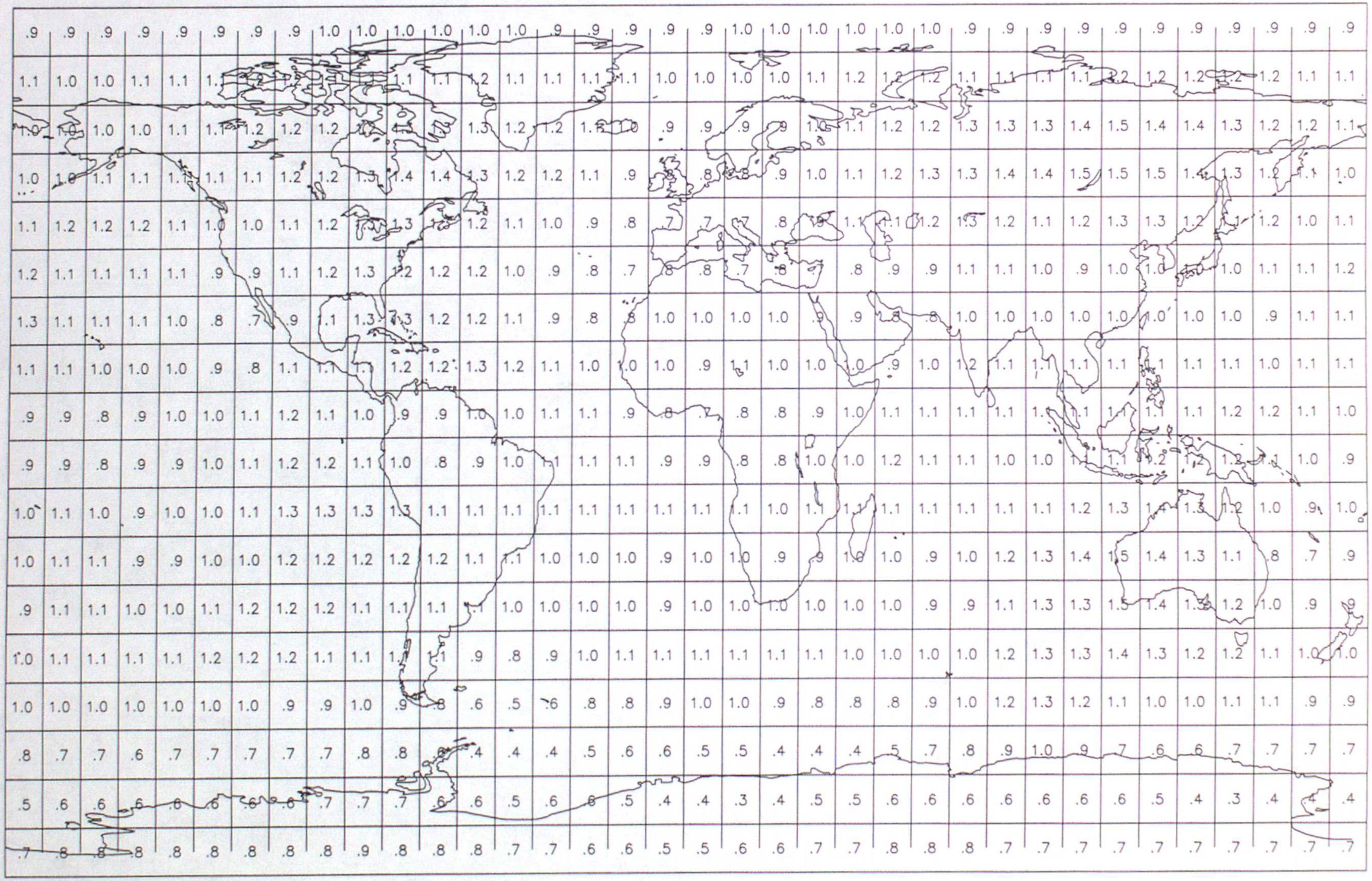
ATOVS : SD O−B BRIGHTNESS TEMPERATURE DIFFERENCES(DEG C)
SEPTEMBER 2000 : AMSUA−7 channel (300 hPa)
NOAA−15, USING ALL OBSERVATIONS

FIGURE 37



.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3
.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.5	.5	.5	.5	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4
.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5
.5	.5	.6	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.4	.5	.5
.5	.6	.5	.5	.5	.7	.5	.5	.5		.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.4	.5	.4	.5	.6	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.6
.6	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.6	.5	.5	.5		.5	.6	.5	.6
.6	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.4	.5	.6	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5
.6	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.6	.5
.5	.5	.5	.5	.5	.5	.5	.5	.6	.5	.5	.5	.5	.5	.5	.5	.5	.6	.4	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.6	.5
.5	.5	.5	.5	.5	.5	.5	.5	.6	.5	.5	.5	.5	.5	.5	.5	.5	.6	.4	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5
.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5
.4	.6	.5	.5	.5	.5	.5	.5	.5	.5	.6	.5	.5	.5	.4	.5	.5	.5	.5	.5	.5	.5	.4	.5	.4	.5	.5	.5	.6	.5	.5	.5	.5	.4	.5	.5
.4	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.6	.5	.5	.5	.5	.5	.5
.5	.5	.6	.5	.5	.5	.6	.5	.6	.7	.8	.8	.6	.5	.5	.5	.5	.5	.7	.5	.5	.5	.5	.5	.5	.5	.6	.6	.6	.6	.8	.7	.5	.5	.5	.6
.6	.6	.6	.5	.5	.6	.6	.6	.6	.7	.7	.9	.7	.5	.5	.6	.6	.6	.6	.6	.6	.6	.6	.5	.6	.6	.6	.6	.6	1.0	1.1	.9	.6	.6	.5	.6
.5	.6	.6	.6	.6	.6	.5	.5	.5	.6	.6	.6	.5	.5	.5	.5	.5	.5	.6	.6	.6	.5	.5	.5	.6	.6	.6	.6	.6	.6	.7	.8	.7	.7	.6	.6
.5	.5	.5	.5	.5	.5	.4	.4	.4	.4	.5	.5	.5	.4	.5	.4	.4	.4	.5	.5	.4	.4	.4	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.6	.5
.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.4	.4	.4	.5	.4	.4	.5	.5	.5	.5	.5	.5	.6	.5	.5	.5	.5	.5

ATOVS : MEAN O-B BRIGHTNESS TEMPERATURE DIFFERENCES (DEG C) FIGURE 38
SEPTEMBER 2000 : AMSUA-9 Channel (100 hPa)
NOAA-15, USING ALL OBSERVATIONS



.9	.9	.9	.9	.9	.9	.9	.9	1.0	1.0	1.0	1.0	1.0	1.0	.9	.9	.9	.9	.9	1.0	1.0	1.0	1.0	1.0	1.0	.9	.9	.9	.9	.9	.9	.9	.9	.9	.9	.9
1.1	1.0	1.0	1.1	1.1	1.1	1.2	[illegible]	[illegible]	[illegible]	1.1	1.1	1.2	1.1	1.1	1.1	1.1	1.0	1.0	1.0	1.0	1.1	1.2	1.2	1.2	1.1	1.1	1.1	1.1	1.2	1.2	1.2	1.2	1.2	1.1	1.1
1.0	1.0	1.0	1.0	1.1	1.1	1.2	1.2	1.2	[illegible]	1.3	1.3	1.3	1.2	1.2	1.1	1.0	.9	.9	.9	.9	1.0	1.1	1.2	1.2	1.3	1.3	1.3	1.4	1.5	1.4	1.4	1.3	1.2	1.2	1.1
1.0	1.0	1.1	1.1	1.1	1.1	1.1	1.2	1.2	1.3	1.4	1.4	1.3	1.2	1.2	1.1	.9	.8	.8	.8	.9	1.0	1.1	1.2	1.3	1.3	1.4	1.4	1.5	1.5	1.5	1.4	1.3	1.2	1.1	1.0
1.1	1.2	1.2	1.2	1.1	1.0	1.0	1.1	1.2	1.3	1.3	1.3	1.2	1.1	1.0	.9	.8	.7	.7	.7	.8	.9	1.1	1.1	1.2	1.3	1.2	1.1	1.2	1.3	1.3	1.2	1.1	1.2	1.0	1.1
1.2	1.1	1.1	1.1	1.1	.9	.9	1.1	1.2	1.3	1.2	1.2	1.2	1.0	.9	.8	.7	.8	.8	.7	.8	.7	.8	.9	.9	1.1	1.1	1.0	.9	1.0	1.0	1.0	1.0	1.1	1.1	1.2
1.3	1.1	1.1	1.1	1.0	.8	.7	.9	1.1	1.3	1.3	1.2	1.2	1.1	.9	.8	.8	1.0	1.0	1.0	1.0	.9	.9	.8	.8	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	.9	1.1	1.1
1.1	1.1	1.0	1.0	1.0	.9	.8	1.1	1.1	1.1	1.2	1.2	1.3	1.2	1.1	1.0	1.0	1.0	.9	1.1	1.0	1.0	1.0	.9	1.0	1.2	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.0	1.1	1.1
.9	.9	.8	.9	1.0	1.0	1.1	1.2	1.1	1.0	.9	.9	1.0	1.0	1.1	1.1	.9	.8	.7	.8	.8	.9	1.0	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.2	1.2	1.1	1.0
.9	.9	.8	.9	.9	1.0	1.1	1.2	1.2	1.1	1.0	.8	.9	1.0	1.1	1.1	1.1	.9	.9	.8	.8	1.0	1.0	1.2	1.1	1.1	1.0	1.0	1.1	1.1	1.2	1.2	1.2	1.1	1.0	.9
1.0	1.1	1.0	.9	1.0	1.0	1.1	1.3	1.3	1.3	1.3	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.0	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.2	1.3	1.4	1.3	1.2	1.0	.9	1.0
1.0	1.1	1.1	.9	.9	1.0	1.0	1.2	1.2	1.2	1.2	1.2	1.1	1.1	1.0	1.0	1.0	.9	1.0	1.0	.9	.9	1.0	1.0	.9	1.0	1.2	1.3	1.4	1.5	1.4	1.3	1.1	.8	.7	.9
.9	1.1	1.1	1.0	1.0	1.1	1.2	1.2	1.2	1.1	1.1	1.1	1.1	1.0	1.0	1.0	1.0	.9	1.0	1.0	1.0	1.0	1.0	1.0	.9	.9	1.1	1.3	1.3	1.5	1.4	1.3	1.2	1.0	.9	.9
1.0	1.1	1.1	1.1	1.1	1.2	1.2	1.2	1.1	1.1	1.1	1.1	.9	.8	.9	1.0	1.1	1.1	1.1	1.1	1.1	1.1	1.0	1.0	1.0	1.0	1.2	1.3	1.3	1.4	1.3	1.2	1.2	1.1	1.0	1.0
1.0	1.0	1.0	1.0	1.0	1.0	1.0	.9	.9	1.0	.9	.8	.6	.5	.6	.8	.8	.9	1.0	1.0	.9	.8	.8	.8	.9	1.0	1.2	1.3	1.2	1.1	1.0	1.0	1.1	1.1	.9	.9
.8	.7	.7	.6	.7	.7	.7	.7	.7	.8	.8	.6	.4	.4	.4	.5	.6	.6	.5	.5	.4	.4	.4	.5	.7	.8	.9	1.0	.9	.7	.6	.6	.7	.7	.7	.7
.5	.6	.6	.6	.6	.6	.6	.6	.7	.7	.7	.6	.6	.5	.6	.6	.5	.4	.4	.3	.4	.5	.5	.6	.6	.6	.6	.6	.6	.6	.5	.4	.3	.4	.4	.4
.7	.8	.8	.8	.8	.8	.8	.8	.8	.9	.8	.8	.8	.7	.7	.6	.6	.5	.5	.6	.6	.7	.7	.8	.8	.8	.7	.7	.7	.7	.7	.7	.7	.7	.7	.7

ATOVS : SD O-B BRIGHTNESS TEMPERATURE DIFFERENCES(DEG C)
SEPTEMBER 2000 : AMSUA-9 channel (100 hPa)
NOAA-15, USING ALL OBSERVATIONS

FIGURE 39

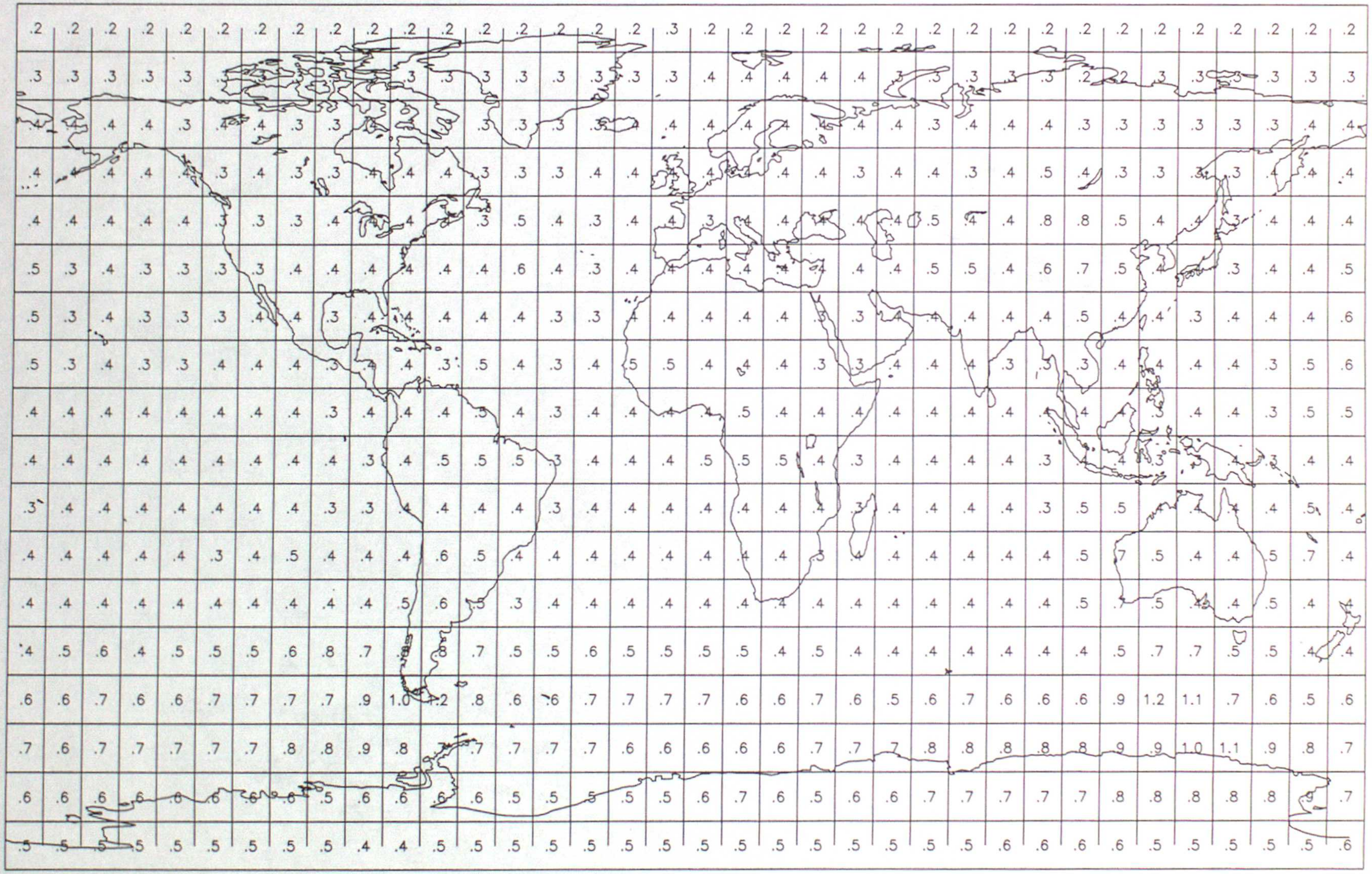

.2 .2 .2 .2 .2 .2 .2 .2 .2 .2 .2 .2 .2 .2 .2 .2 .2 .3 .2 .2 .2 .2 .2 .2 .2 .2 .2 .2 .2 .2 .2 .2 .2 .2 .2 .2
.3 .3 .3 .3 .3 .3 [illegible] [illegible] [illegible] [illegible] .3 .3 .3 .3 .3 .3 .3 .3 .4 .4 .4 .4 .4 .3 .3 .3 .3 .3 .2 .2 .3 .3 .3 .3 .3 .3
.4 .4 .4 .4 .3 .4 .4 .3 .3 .4 [illegible] .3 .3 .3 .3 .3 .4 .4 .4 .4 .4 .4 .4 .4 .3 .4 .4 .4 .3 .3 .3 .3 .3 .3 .4 .4
.4 .4 .4 .4 .4 .3 .4 .3 .3 .4 .4 .4 .3 .3 .3 .4 .4 .4 .4 .4 .4 .4 .3 .4 .4 .3 .4 .5 .4 .3 .3 .3 .3 .4 .4 .4
.4 .4 .4 .4 .4 .3 .3 .3 .4 .4 .4 .4 .3 .5 .4 .3 .4 .4 .3 .4 .4 .4 .4 .4 .5 .4 .4 .8 .8 .5 .4 .4 .3 .4 .4 .4
.5 .3 .4 .3 .3 .3 .3 .4 .4 .4 .4 .4 .4 .6 .4 .3 .4 .4 .4 .4 .4 .4 .4 .4 .5 .5 .4 .6 .7 .5 .4 [illegible] .3 .4 .4 .5
.5 .3 .4 .3 .3 .3 .4 .4 .3 .4 .4 .4 .4 .4 .3 .3 .4 .4 .4 .4 .4 .3 .3 .4 .4 .4 .4 .4 .5 .4 .4 .3 .4 .4 .4 .6
.5 .3 .4 .3 .3 .4 .4 .4 .3 .4 .4 .3 .5 .4 .3 .4 .5 .5 .4 .4 .4 .3 .3 .4 .4 .4 .3 .3 .3 .4 .4 .4 .4 .3 .5 .6
.4 .4 .4 .4 .4 .4 .4 .4 .3 .4 .4 .4 .5 .4 .3 .4 .4 .4 .4 .5 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .3 .4 .4 .3 .5 .5
.4 .4 .4 .4 .4 .4 .4 .4 .4 .3 .4 .5 .5 .5 .3 .4 .4 .4 .5 .5 .5 .4 .3 .4 .4 .4 .4 .3 .4 .4 .3 .3 .4 .3 .4 .4
.3 .4 .4 .4 .4 .4 .4 .4 .3 .3 .4 .4 .4 .4 .3 .4 .4 .4 .4 .4 .4 .4 .3 .4 .4 .4 .4 .3 .5 .5 .4 .4 .4 .4 .5 .4
.4 .4 .4 .4 .4 .3 .4 .5 .4 .4 .4 .6 .5 .4 .4 .4 .4 .4 .4 .4 .4 .3 .4 .4 .4 .4 .4 .4 .5 .7 .5 .4 .4 .5 .7 .4
.4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .5 .6 .5 .3 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .5 .7 .5 .4 .4 .5 .4 .4
.4 .5 .6 .4 .5 .5 .5 .6 .8 .7 .8 .8 .7 .5 .5 .6 .5 .5 .5 .5 .4 .5 .4 .4 .4 .4 .4 .4 .4 .5 .7 .7 .5 .5 .4 .4
.6 .6 .7 .6 .6 .7 .7 .7 .7 .9 1.0 1.2 .8 .6 .6 .7 .7 .7 .7 .6 .6 .7 .6 .5 .6 .7 .6 .6 .6 .9 1.2 1.1 .7 .6 .5 .6
.7 .6 .7 .7 .7 .7 .7 .8 .8 .9 .8 .7 .7 .7 .7 .7 .6 .6 .6 .6 .6 .7 .7 .7 .8 .8 .8 .8 .8 .9 .9 1.0 1.1 .9 .8 .7
.6 .6 .6 .6 .6 .6 .6 .6 .5 .6 .6 .6 .6 .5 .5 .5 .5 .5 .6 .7 .6 .5 .6 .6 .7 .7 .7 .7 .7 .8 .8 .8 .8 .8 .9 .7
.5 .5 .5 .5 .5 .5 .5 .5 .5 .4 .4 .5 .5 .5 .5 .5 .5 .5 .5 .5 .5 .5 .5 .5 .5 .5 .6 .6 .6 .6 .5 .5 .5 .5 .5 .6

TABLE 8

MONTHLY MONITORING OF MARINE SURFACE OBSERVATIONS (COSNA)
DATA TYPE:- DRIFTER
MONITORING CENTRE: BRACKNELL
MONTH: September 2000

Monitoring procedures

Period		:One calendar month.
Data monitored		:Reports from each unique identifier for drifting buoy.
Area monitored		:10°N - 80°N, 85°W - 0°W
Standard of comparison		:Background field from UKMO global model.
Position		:Average latitude and longitude for period.
Observation times		:All hours combined.
Elements monitored		:Mean sea-level pressure (hPa) :Wind speed (m s^{-1}) :Wind direction (degrees)
Parameters monitored	:NOBS	:Number of observations received excluding duplicates.
	:NGE	:Number of observations with gross errors.
	:PGE	:Percentage of observations with gross errors.
	:SD	:SD of difference of observations from background values excluding those with gross errors.
	:BIAS	:Mean difference of observations from background values excluding those with gross errors. **N.B. A positive bias indicates the observation is veered to the background**
	:RMS	:Root Mean Square difference of observations from background values excluding those with gross errors

GROSS ERROR LIMITS :15 hPa (pressure)
:25 m s^{-1} (Vector Wind)

N.B. Observations of wind direction are only included in the wind direction statistics if the observed OR background wind speed > 5 m s^{-1}

MEAN SEA LEVEL PRESSURE

IDENTIFIER	LAT.	LONG.	HOUR	ELEM	LEVEL	NOBS	NGE	PGE	SD	BIAS	RMS
21517	37.1	-8.5	ALL	P	SUR	1	1	100			
41501	26.4	-72.4	ALL	P	SUR	353	0	0	0.7	0.4	0.8
41502	25.8	-75.4	ALL	P	SUR	211	0	0	0.7	0.8	1.1
41503	26.6	-74.9	ALL	P	SUR	187	0	0	0.8	0.6	1.0
41504	23.0	-72.1	ALL	P	SUR	185	0	0	1.3	0.4	1.3
41505	24.8	-67.1	ALL	P	SUR	186	0	0	0.9	-0.5	1.0
41506	20.8	-67.8	ALL	P	SUR	180	0	0	0.8	0.3	0.8
41521	34.0	-65.9	ALL	P	SUR	302	0	0	0.7	0.4	0.8
41522	21.6	-68.1	ALL	P	SUR	184	0	0	0.8	0.3	0.8
41523	25.7	-62.6	ALL	P	SUR	334	0	0	0.7	-0.1	0.7
41524	18.2	-72.1	ALL	P	SUR	191	1	1	3.5	1.8	3.9
41571	28.5	-56.5	ALL	P	SUR	200	0	0	0.5	0.4	0.7
41572	21.9	-46.3	ALL	P	SUR	505	0	0	0.8	0.1	0.8
41590	19.2	-51.0	ALL	P	SUR	510	0	0	0.6	0.5	0.8
41594	14.0	-63.4	ALL	P	SUR	520	0	0	0.5	0.6	0.7
41595	17.1	-66.0	ALL	P	SUR	521	0	0	0.6	0.6	0.8
41611	13.7	-49.8	ALL	P	SUR	500	0	0	0.7	0.4	0.8
41613	12.4	-35.3	ALL	P	SUR	475	0	0	0.9	0.3	0.9
41615	16.4	-47.6	ALL	P	SUR	475	0	0	0.7	0.1	0.7
41616	19.6	-51.0	ALL	P	SUR	530	0	0	0.6	0.3	0.7
41630	20.2	-61.2	ALL	P	SUR	140	109	78	0.4	0.2	0.4
41639	18.6	-59.5	ALL	P	SUR	92	0	0	0.4	0.9	1.0
41642	20.6	-64.0	ALL	P	SUR	100	0	0	0.5	0.0	0.5
41644	29.7	-51.5	ALL	P	SUR	334	0	0	0.8	0.0	0.8
44607	53.3	-23.9	ALL	P	SUR	25	1	4	0.7	-1.1	1.3
44608	28.4	-20.8	ALL	P	SUR	1445	0	0	0.5	0.0	0.5
44610	52.5	-31.8	ALL	P	SUR	1433	1	0	1.2	-0.3	1.2
44611	46.5	-21.2	ALL	P	SUR	539	0	0	0.8	0.4	0.9
44612	36.4	-43.1	ALL	P	SUR	560	0	0	0.8	0.0	0.8
44613	27.7	-54.9	ALL	P	SUR	695	2	0	1.0	0.0	1.0
44615	34.5	-44.7	ALL	P	SUR	199	0	0	0.9	0.1	0.9
44617	49.2	-23.2	ALL	P	SUR	568	0	0	2.3	0.2	2.3
44620	29.9	-41.3	ALL	P	SUR	544	0	0	0.6	-0.1	0.6
44622	52.4	-28.7	ALL	P	SUR	595	0	0	0.9	-0.1	0.9
44623	39.9	-30.6	ALL	P	SUR	546	0	0	1.0	-0.1	1.0
44626	43.0	-13.3	ALL	P	SUR	1236	7	1	1.1	0.1	1.1
44627	37.8	-25.7	ALL	P	SUR	234	1	0	0.8	0.0	0.8
44628	37.7	-33.6	ALL	P	SUR	1165	2	0	1.0	-0.1	1.0
44630	52.6	-10.3	ALL	P	SUR	1181	4	0	0.8	0.2	0.8
44723	47.7	-22.8	ALL	P	SUR	531	0	0	1.0	-0.7	1.2
44724	45.0	-29.4	ALL	P	SUR	536	0	0	0.8	-0.3	0.9
44725	48.2	-39.3	ALL	P	SUR	436	0	0	0.8	-0.3	0.9
44726	27.8	-55.9	ALL	P	SUR	657	1	0	1.0	0.1	1.0
44727	29.8	-39.0	ALL	P	SUR	213	0	0	0.7	-0.6	0.9
44729	49.3	-30.8	ALL	P	SUR	525	0	0	1.0	0.0	1.0
44730	53.7	-28.2	ALL	P	SUR	640	0	0	1.0	0.0	1.0
44739	44.3	-57.4	ALL	P	SUR	1	0	0	0.0	0.2	0.2
44741	62.4	-31.6	ALL	P	SUR	580	0	0	0.9	0.0	0.9
44743	48.8	-24.6	ALL	P	SUR	1415	5	0	0.9	0.0	0.9
44761	52.8	-45.4	ALL	P	SUR	580	0	0	0.9	-0.3	1.0
44762	49.4	-37.2	ALL	P	SUR	355	1	0	0.9	0.3	0.9
44764	42.9	-37.2	ALL	P	SUR	545	0	0	0.8	0.1	0.8
44765	34.7	-57.2	ALL	P	SUR	605	2	0	1.1	0.2	1.1
44767	54.3	-46.1	ALL	P	SUR	403	0	0	1.0	-0.1	1.0
44768	57.0	-45.0	ALL	P	SUR	435	0	0	0.8	-0.1	0.8
44769	57.8	-52.3	ALL	P	SUR	93	0	0	0.8	-0.2	0.8
44770	53.3	-48.8	ALL	P	SUR	584	0	0	0.7	-0.1	0.7
44771	55.9	-41.0	ALL	P	SUR	408	2	0	0.9	0.0	0.9
44772	48.9	-37.3	ALL	P	SUR	1462	8	1	0.9	-0.6	1.1
44776	48.4	-4.5	ALL	P	SUR	1	1	100			

IDENTIFIER	LAT.	LONG.	HOUR	ELEM	LEVEL	NOBS	NGE	PGE	SD	BIAS	RMS
MEAN SEA LEVEL PRESSURE											
44807	43.5	-70.1	ALL	P	SUR	1	0	0	0.0	0.3	0.3
44808	40.5	-69.4	ALL	P	SUR	1	0	0	0.0	0.1	0.1
44813	42.4	-70.7	ALL	P	SUR	1	0	0	0.0	0.3	0.3
44825	40.3	-73.2	ALL	P	SUR	2	0	0	0.0	0.0	0.1
45805	41.7	-82.4	ALL	P	SUR	1	0	0	0.0	0.7	0.7
56542	44.7	-63.6	ALL	P	SUR	19	0	0	0.9	-4.9	5.0
62507	35.3	-24.8	ALL	P	SUR	1094	5	0	0.7	-0.2	0.7
62508	37.4	-19.0	ALL	P	SUR	690	0	0	1.2	-0.2	1.2
62509	45.4	-7.5	ALL	P	SUR	1056	0	0	0.7	-0.1	0.7
62512	40.0	-22.4	ALL	P	SUR	371	0	0	0.7	0.2	0.8
62513	45.9	-26.3	ALL	P	SUR	293	0	0	0.9	-1.0	1.4
62514	51.4	-18.5	ALL	P	SUR	622	1	0	1.3	-0.2	1.3
62516	46.4	-22.6	ALL	P	SUR	588	0	0	0.8	-0.3	0.9
62517	39.2	-20.8	ALL	P	SUR	178	0	0	0.7	-0.5	0.8
62519	44.0	-16.6	ALL	P	SUR	97	0	0	0.7	-0.9	1.1
62520	32.8	-31.1	ALL	P	SUR	1021	7	1	0.7	-0.4	0.8
62596	61.8	-21.4	ALL	P	SUR	580	0	0	0.9	-0.3	0.9
62597	48.4	-4.5	ALL	P	SUR	141	0	0	0.4	-6.4	6.4
62703	49.9	-2.9	ALL	P	SUR	2	0	0	0.8	0.5	0.9
62705	55.0	-12.6	ALL	P	SUR	1	0	0	0.0	-0.1	0.1
62708	53.5	-19.5	ALL	P	SUR	1	0	0	0.0	-2.3	2.3
62743	61.8	-2.2	ALL	P	SUR	1	0	0	0.0	1.5	1.5
62763	47.5	-8.5	ALL	P	SUR	1	0	0	0.0	-1.0	1.0
62829	48.7	-12.4	ALL	P	SUR	1	0	0	0.0	0.5	0.5
64517	60.7	-18.8	ALL	P	SUR	1119	0	0	0.9	-0.5	1.0
64519	66.3	-21.8	ALL	P	SUR	296	0	0	0.8	-0.6	1.0
64520	66.6	-24.3	ALL	P	SUR	487	0	0	1.1	-0.4	1.1
64521	62.5	-22.9	ALL	P	SUR	185	0	0	0.7	-0.6	0.9
64546	50.3	-21.9	ALL	P	SUR	1260	3	0	1.1	1.0	1.5
64548	59.7	-18.7	ALL	P	SUR	1458	11	1	1.2	-0.7	1.4
64698	61.8	-25.6	ALL	P	SUR	1040	0	0	0.8	-0.7	1.1
64699	59.3	-52.6	ALL	P	SUR	1101	0	0	1.0	-0.5	1.1
65593	62.6	-32.3	ALL	P	SUR	1910	4	0	0.8	-0.9	1.2
65599	60.9	-28.9	ALL	P	SUR	2236	7	0	0.8	-0.4	0.9
65600	57.3	-25.9	ALL	P	SUR	1865	2	0	0.9	-0.7	1.2
65601	60.6	-29.2	ALL	P	SUR	1337	7	1	1.6	-0.8	1.8
65602	61.7	-28.9	ALL	P	SUR	1533	4	0	1.2	-1.0	1.5
97772	45.1	-44.9	ALL	P	SUR	1	1	100			
WIND SPEED											
41501	26.4	-72.4	ALL	SPEED	SUR	336	0	0	2.9	1.1	3.1
41502	25.8	-75.4	ALL	SPEED	SUR	140	1	1	6.1	2.2	6.5
41503	26.6	-74.9	ALL	SPEED	SUR	116	0	0	2.3	0.2	2.3
41504	23.0	-72.1	ALL	SPEED	SUR	125	0	0	2.8	0.8	3.0
41505	24.8	-67.1	ALL	SPEED	SUR	139	0	0	4.9	2.7	5.6
41506	20.8	-67.8	ALL	SPEED	SUR	112	0	0	2.0	-0.9	2.2
41521	34.0	-65.9	ALL	SPEED	SUR	261	0	0	1.9	-1.4	2.4
41522	21.6	-68.1	ALL	SPEED	SUR	128	0	0	4.6	0.5	4.7
41523	25.7	-62.6	ALL	SPEED	SUR	320	5	2	2.8	0.2	2.8
41590	19.2	-51.0	ALL	SPEED	SUR	505	0	0	2.5	-0.6	2.6
41594	14.0	-63.4	ALL	SPEED	SUR	508	2	0	2.6	0.4	2.7
41611	13.7	-49.8	ALL	SPEED	SUR	496	0	0	2.3	-0.1	2.3
41613	12.4	-35.3	ALL	SPEED	SUR	465	64	14	7.1	5.8	9.2
41615	16.4	-47.6	ALL	SPEED	SUR	461	16	3	4.9	1.6	5.1
41616	19.6	-51.0	ALL	SPEED	SUR	525	1	0	1.7	0.4	1.8
41630	20.2	-61.2	ALL	SPEED	SUR	346	0	0	2.2	-2.6	3.4
41639	18.6	-59.5	ALL	SPEED	SUR	92	0	0	2.3	-0.2	2.3
41642	20.6	-64.0	ALL	SPEED	SUR	96	0	0	3.6	0.0	3.6
44607	53.3	-23.9	ALL	SPEED	SUR	25	0	0	1.3	2.7	3.0
44726	27.8	-55.9	ALL	SPEED	SUR	17	0	0	0.9	-0.3	1.0

IDENTIFIER	LAT.	LONG.	HOUR	ELEM	LEVEL	NOBS	NGE	PGE	SD	BIAS	RMS
WIND SPEED											
44739	44.3	-57.4	ALL	SPEED	SUR	1	0	0	0.0	2.0	2.0
44743	48.8	-24.6	ALL	SPEED	SUR	1387	0	0	1.9	-0.6	2.0
44772	48.9	-37.3	ALL	SPEED	SUR	278	7	3	1.8	-1.1	2.1
44808	40.5	-69.4	ALL	SPEED	SUR	1	0	0	0.0	-2.1	2.1
44825	40.3	-73.2	ALL	SPEED	SUR	2	0	0	1.1	0.0	1.1
62506	35.5	-30.5	ALL	SPEED	SUR	586	0	0	1.6	-0.7	1.7
62508	37.4	-19.0	ALL	SPEED	SUR	655	0	0	1.3	-0.3	1.4
62703	49.9	-2.9	ALL	SPEED	SUR	2	0	0	0.2	1.9	1.9
62705	55.0	-12.6	ALL	SPEED	SUR	2	0	0	0.1	-0.5	0.6
62707	50.1	-6.1	ALL	SPEED	SUR	1	0	0	0.0	-1.8	1.8
62708	53.5	-19.5	ALL	SPEED	SUR	1	0	0	0.0	-4.8	4.8
62743	61.8	-2.2	ALL	SPEED	SUR	1	0	0	0.0	1.4	1.4
62763	47.5	-8.5	ALL	SPEED	SUR	1	0	0	0.0	-0.6	0.6
62829	48.7	-12.4	ALL	SPEED	SUR	1	0	0	0.0	1.6	1.6
97772	45.1	-44.9	ALL	SPEED	SUR	1	0	0	0.0	0.7	0.7
WIND DIRECTION											
41501	26.4	-72.4	ALL	DIRN.	SUR	130	0	0	18.4	-1.9	18.5
41502	25.8	-75.4	ALL	DIRN.	SUR	12	1	8	13.8	1.6	13.9
41503	26.6	-74.9	ALL	DIRN.	SUR	35	0	0	16.9	7.8	18.6
41504	23.0	-72.1	ALL	DIRN.	SUR	28	0	0	25.3	12.6	28.3
41505	24.8	-67.1	ALL	DIRN.	SUR	42	0	0	40.1	6.4	40.6
41506	20.8	-67.8	ALL	DIRN.	SUR	22	0	0	15.2	-14.9	21.3
41521	34.0	-65.9	ALL	DIRN.	SUR	165	0	0	16.1	-14.9	21.9
41522	21.6	-68.1	ALL	DIRN.	SUR	19	0	0	23.5	11.8	26.3
41523	25.7	-62.6	ALL	DIRN.	SUR	122	5	4	54.2	-25.7	60.0
41590	19.2	-51.0	ALL	DIRN.	SUR	441	0	0	14.6	3.3	15.0
41594	14.0	-63.4	ALL	DIRN.	SUR	343	2	1	14.2	-1.8	14.4
41611	13.7	-49.8	ALL	DIRN.	SUR	346	0	0	18.8	5.8	19.7
41613	12.4	-35.3	ALL	DIRN.	SUR	364	64	18	21.2	0.9	21.2
41615	16.4	-47.6	ALL	DIRN.	SUR	379	16	4	16.5	-7.3	18.1
41616	19.6	-51.0	ALL	DIRN.	SUR	512	1	0	13.1	7.1	14.9
41630	20.2	-61.2	ALL	DIRN.	SUR	55	0	0	33.3	-12.7	35.6
41639	18.6	-59.5	ALL	DIRN.	SUR	52	0	0	19.7	-17.5	26.3
41642	20.6	-64.0	ALL	DIRN.	SUR	32	0	0	19.3	-6.6	20.4
44607	53.3	-23.9	ALL	DIRN.	SUR	8	0	0	52.2	17.7	55.1
44743	48.8	-24.6	ALL	DIRN.	SUR	954	0	0	41.6	12.7	43.5
44772	48.9	-37.3	ALL	DIRN.	SUR	247	7	3	69.6	66.0	95.9
44825	40.3	-73.2	ALL	DIRN.	SUR	1	0	0	0.0	-21.3	21.3
62506	35.5	-30.5	ALL	DIRN.	SUR	104	0	0	15.1	4.1	15.7
62508	37.4	-19.0	ALL	DIRN.	SUR	268	0	0	12.0	-3.1	12.4
62703	49.9	-2.9	ALL	DIRN.	SUR	1	0	0	0.0	-33.5	33.5
62705	55.0	-12.6	ALL	DIRN.	SUR	1	0	0	0.0	9.9	9.9
62708	53.5	-19.5	ALL	DIRN.	SUR	1	0	0	0.0	31.0	31.0
62763	47.5	-8.5	ALL	DIRN.	SUR	1	0	0	0.0	-15.6	15.6
62829	48.7	-12.4	ALL	DIRN.	SUR	1	0	0	0.0	-3.4	3.4
97772	45.1	-44.9	ALL	DIRN.	SUR	1	0	0	0.0	-12.5	12.5

TABLE 9

MONTHLY MONITORING OF AIRCRAFT OBSERVATIONS (COSNA)
MONITORING CENTRE: BRACKNELL
MONTH: September 2000

Monitoring procedures:

Period :One calendar month.

Data monitored :Statistics for each airline carrier.

Area monitored :40°N - 70°N, 60°W - 0°W.

Standard of comparison :Background field from UKMO global model.

Observation times :All hours combined.

Level(s) monitored :300.0 - 150.0 hPa

Elements monitored :TEMP in °C ; WIND in m s^{-1}

Parameters monitored :N REP. :Number of observations received excluding duplicates.

:PG :Percentage of observations with gross errors.

:PR :Percentage of observations rejected by quality control including rejections from the duplicate check.

:PC :Percentage of observations with calm winds.

:RMS :Root Mean Square difference of observations from background values excluding those with gross errors in Temperature & vector wind.

:BIAS :Mean difference of observations from background values excluding those with gross errors in Temperature & vector wind.

GROSS ERROR LIMITS :10.0 °C ; 60 m s^{-1} Vector Wind

SELECTION CRITERIA :N REP $\geq$ 20

NB: All American ACARS data are grouped together and statistics are shown at the bottom of the table as "US ACARS". All ADS reports are similarly grouped together.

	TEMPERATURE					WIND					
IDENT.	N.REP.	PG	PR	RMS	BIAS	N.REP.	PG	PR	PC	RMS	BIAS
AAL	2874	0	4	1.5	0.2	2858	0	5	0	7.4	0.8
ACA	1475	0	2	1.8	0.1	1498	0	3	0	6.8	0.8
AEA	333	1	7	1.6	0.3	329	0	8	0	8.7	0.3
AEL	263	1	12	1.7	-0.1	271	1	14	0	8.3	1.5
AEY	38	3	5	1.8	1.3	38	0	3	0	5.6	0.6
AFL	401	0	3	1.7	0.4	406	0	4	0	7.8	0.5
AFR	1006	0	5	1.7	-0.1	1030	0	6	0	6.8	0.6
AIH	127	0	4	1.0	-0.1	129	0	5	0	6.7	0.7
AJM	130	1	2	1.4	-0.5	135	0	2	0	6.6	0.4
AMM	36	0	0	1.7	0.5	40	0	5	0	9.4	1.0
AMX	161	1	2	1.7	0.5	161	0	4	0	9.8	1.4
ANZ	140	0	37	1.8	-0.9	143	0	41	0	9.0	-0.1
AOM	291	0	3	1.5	0.7	299	0	6	0	8.8	0.3
AUA	25	0	0	1.8	1.1	25	0	4	0	7.4	1.2
AVA	293	0	2	1.5	0.4	304	0	5	0	8.5	0.6
AZA	503	5	12	2.5	0.7	517	0	6	0	8.7	0.0
BAL	141	0	7	1.3	-0.5	141	0	11	0	8.0	0.4
BAW	1141	1	5	1.8	0.3	1169	0	5	0	6.8	0.8
BLX	22	0	0	1.8	-1.6	22	0	5	0	9.0	2.4
BWA	52	0	0	1.8	1.3	54	2	4	0	6.8	0.4
CDN	492	0	1	1.8	0.4	491	1	3	0	7.0	0.6
CFC	31	0	10	2.1	1.2	32	0	9	0	7.7	2.9
CFG	396	0	2	1.7	-0.9	402	1	2	0	6.5	0.6
CGB	26	0	4	1.5	0.4	27	0	4	0	10.1	1.1
CLX	255	0	1	1.5	-0.4	257	0	2	0	7.4	0.9
CMM	453	0	2	1.5	0.1	456	0	3	0	5.6	0.7
COA	553	1	5	1.5	0.1	552	0	9	0	10.8	1.9
CRL	198	1	2	1.6	0.5	207	1	5	0	8.5	1.0
CTB	130	0	5	1.7	0.4	130	0	4	0	5.7	0.7
CTM	20	0	15	1.0	0.0	20	0	20	0	14.7	3.3
CUB	88	1	2	1.7	1.4	89	0	2	0	7.3	0.6
DAL	1486	0	16	1.5	-0.2	1519	0	18	0	8.8	0.6
DBY	284	0	3	1.3	-0.3	291	0	4	0	7.2	0.7
DCS	55	0	0	1.6	0.0	55	0	5	0	9.7	0.3
DLH	1597	1	6	1.6	0.0	1617	0	6	0	6.9	0.3
ECH	32	3	13	2.6	-0.3	32	0	9	0	8.0	0.3
EEZ	91	10	100	4.5	3.2	97	0	8	0	10.3	0.7
EIN	30	3	3	1.7	-0.4	30	0	3	0	9.0	2.8
ELY	113	2	5	1.9	-0.2	113	0	1	0	7.3	0.2
ETH	29	0	14	1.4	-0.5	32	0	16	0	9.5	2.2
EWW	104	0	10	1.5	0.0	106	0	10	0	9.8	0.9
FDX	734	1	6	1.6	0.4	756	0	8	0	8.7	1.1
FIN	312	0	2	1.4	0.4	305	1	4	0	7.0	0.8
GAF	45	0	9	2.1	-0.4	44	0	7	0	7.6	1.5
GCO	100	0	4	1.5	0.3	103	0	100	0	16.8	5.1
GRL	35	0	0	1.3	-0.1	35	0	0	0	6.2	0.6
GTI	145	1	10	2.3	-0.8	148	1	9	0	7.9	0.8
HLF	38	0	3	1.3	-0.2	38	0	3	0	6.1	0.9
IBE	1129	1	10	1.5	0.6	1116	0	11	0	8.1	0.9
ICE	1145	0	2	1.5	0.3	1134	0	3	0	7.0	0.4
IWD	39	0	5	1.8	0.0	38	0	5	0	7.3	0.4
JKK	209	1	4	1.4	0.2	196	0	4	0	7.9	-0.5
JMC	114	2	11	1.5	1.2	105	0	10	0	6.8	0.6
KLM	1437	0	9	1.6	0.2	1451	0	9	0	7.3	0.5
LDA	48	0	0	0.8	-0.4	49	0	2	0	7.5	0.4
LDI	314	2	100	2.7	0.1	321	0	3	0	7.7	-0.1
LIB	120	1	5	1.8	0.9	123	2	8	0	8.9	0.3
LOT	247	0	2	1.6	-1.0	248	0	5	0	6.7	0.6
LTU	435	1	5	1.5	-0.3	438	0	5	0	7.1	0.7

	TEMPERATURE					WIND					
IDENT.	N.REP.	PG	PR	RMS	BIAS	N.REP.	PG	PR	PC	RMS	BIAS
MAS	20	0	10	3.0	0.7	24	4	4	0	5.6	1.2
MMZ	34	0	6	2.0	1.4	37	0	11	0	9.2	2.3
MON	54	2	9	2.0	0.5	56	0	5	0	8.0	0.8
MPD	160	1	3	1.5	0.0	160	1	4	0	9.9	1.0
MPH	635	0	3	1.8	-0.4	643	0	4	0	7.0	0.5
NCA	26	0	4	2.5	0.4	25	0	0	0	6.9	-1.6
NWA	3601	0	2	1.7	0.5	3562	0	2	0	7.0	0.5
OAE	28	0	4	1.2	0.3	27	0	15	0	17.2	4.0
PAC	79	1	8	2.0	0.4	85	0	6	0	6.4	2.2
RAM	57	2	7	1.4	-0.5	56	0	5	0	5.1	0.4
RCH	96	7	14	2.1	1.0	101	1	10	0	10.9	0.9
RJA	58	0	7	2.4	-0.7	56	2	11	0	12.0	1.7
ROY	136	0	2	1.6	-0.5	135	0	76	0	8.4	-0.1
RRR	66	0	9	2.2	0.0	67	1	9	0	7.4	1.1
RZO	131	2	8	1.1	-0.3	134	0	7	0	8.0	1.5
SAS	1283	0	35	1.5	-0.2	1276	0	35	0	7.1	0.3
SIA	80	3	8	1.9	-0.7	81	1	6	0	6.7	0.7
SLR	125	0	11	1.6	-1.0	130	0	12	0	6.8	0.3
SVA	69	0	4	1.2	0.4	77	0	9	0	10.4	-0.3
SWR	64	2	5	1.4	0.2	64	0	5	0	8.2	1.2
TAP	400	1	7	1.5	-0.1	396	0	7	0	7.6	1.1
TPA	20	0	5	2.6	0.5	20	0	0	0	5.0	1.0
TSC	199	1	3	1.6	0.3	201	0	4	0	8.5	0.8
TWA	625	0	4	1.4	0.0	595	1	6	0	7.5	1.2
UAL	1363	0	100	1.7	-0.1	1384	0	100	0	6.8	0.7
UPS	804	1	13	1.9	-0.1	799	0	12	0	7.7	0.4
USA	161	0	2	1.5	0.1	145	0	2	0	8.2	0.7
VIR	550	0	1	1.4	-0.1	563	1	4	0	7.9	0.7
VKG	33	3	6	1.8	-0.1	33	0	6	0	11.6	-1.0
VPB	22	0	0	2.1	0.2	24	0	0	0	4.3	0.6
WOA	56	5	14	1.4	-0.1	56	2	14	0	8.3	2.2
YSS	28	0	0	1.2	0.6	28	0	0	0	5.4	0.5
EU	17072	0	16	1.2	-0.1	17072	0	16	0	5.0	0.4
KL	3474	0	11	1.4	0.8	3460	0	10	0	5.0	0.8
LH	772	0	9	1.6	1.1	770	0	8	0	4.5	0.7
N	490	2	6	2.5	0.8	501	0	3	0	7.7	1.1
US ACARS	18135	0	24	1.4	0.6	18134	0	19	0	5.4	0.7

TABLE 10

MONTHLY MONITORING OF RADIOSONDE OBSERVATIONS (COSNA)
MONITORING CENTRE: BRACKNELL
MONTH: September 2000

Monitoring procedures

Period		:One calendar month.
Data monitored		:Reports from selected radiosonde TEMPs.
Area monitored		:0°N - 90°N, 100°W - 40°E
Standard of comparison		:Background field from UKMO global model.
Position		:Average latitude and longitude for period.
Observation times		:00, 12 UTC.
Level monitored		:100 hPa.
Element monitored		:GEOPOTENTIAL HEIGHT in metres
Parameters monitored	:NUM OBS	:Number of observations available at level shown during period.
	:NUM GROSS	:Number of gross errors at level shown during period.
	:SD	:SD of difference of observations from background values at level shown excluding those with gross errors.
	:BIAS	:Mean difference of observations from background values at level shown excluding those with gross errors.

GROSS ERROR LIMITS :Defined in Appendix I.1

WMO IDENT	OBS TIME	ELM	LEV	NUM OBS	NUM GROSS	SD	RMS	BIAS
ELML7	00	Z	100	12	0	13.7	28.9	25.5
ELML7	12	Z	100	18	0	22.7	31.2	21.3
FNOR	00	Z	100	10	0	8.0	19.2	17.4
FNOR	12	Z	100	8	0	12.0	18.9	14.6
FNOU	00	Z	100	11	0	12.5	26.0	22.8
FNOU	12	Z	100	12	0	11.9	14.8	8.8
FNPH	00	Z	100	11	0	11.1	24.6	21.9
FNPH	12	Z	100	11	1	11.1	19.5	16.0
FNRS	00	Z	100	11	0	6.8	19.2	18.0
FNRS	12	Z	100	11	0	8.2	13.7	11.0
LDWR	00	Z	100	29	0	8.1	9.7	5.3
LDWR	12	Z	100	28	0	13.5	14.2	-4.4
OVYA2	00	Z	100	9	0	18.0	23.6	15.3
OVYA2	12	Z	100	14	0	25.2	25.2	0.4
OXYH2	00	Z	100	15	0	17.8	18.6	5.3
OXYH2	12	Z	100	14	0	13.0	13.0	-0.8
SHIPCK	00	Z	100	1	0	0.0	54.0	54.0
ZCBP6	00	Z	100	4	0	13.0	18.1	12.5
ZCBP6	12	Z	100	5	0	15.7	21.0	14.0
03953	00	Z	100	29	0	9.4	27.5	25.9
03953	12	Z	100	29	0	13.9	20.1	14.6
04018	00	Z	100	28	0	15.0	19.9	13.1
04018	12	Z	100	28	0	16.8	18.1	6.7
04220	00	Z	100	27	0	8.9	10.4	5.4
04220	12	Z	100	29	0	11.0	11.4	2.9
04270	00	Z	100	26	0	13.8	13.9	0.9
04270	12	Z	100	27	0	14.8	14.9	-2.1
04339	00	Z	100	28	0	11.2	21.7	18.6
04339	12	Z	100	28	0	9.4	11.4	6.3
04360	00	Z	100	27	0	11.0	11.8	4.2
04360	12	Z	100	29	0	12.8	13.7	-4.8
08001	00	Z	100	29	0	27.3	27.8	-5.3
08001	12	Z	100	25	0	27.1	28.9	-10.1
08508	00	Z	100	9	0	6.4	25.9	25.1
08508	12	Z	100	28	0	40.6	42.3	11.8
08522	12	Z	100	28	0	8.8	15.0	12.2
08594	12	Z	100	1	0	0.0	10.0	10.0
60020	12	Z	100	1	0	0.0	29.0	29.0
71600	00	Z	100	28	0	12.1	22.4	18.8
71600	12	Z	100	28	0	12.0	21.7	18.1
72201	00	Z	100	27	0	47.3	48.7	-11.6
72201	12	Z	100	25	0	34.4	34.4	-0.2
72402	00	Z	100	29	0	9.5	24.3	22.4
72402	12	Z	100	28	0	15.6	46.9	44.3
74494	00	Z	100	25	0	10.2	12.4	7.0
74494	12	Z	100	22	0	8.3	10.2	-6.0
78016	00	Z	100	27	0	19.7	43.7	39.0
78016	12	Z	100	27	0	21.2	46.6	41.5

TABLE 11

MONTHLY MONITORING OF RADIOSONDE OBSERVATIONS (COSNA)
MONITORING CENTRE: BRACKNELL
MONTH: September 2000

Monitoring procedures:

Period		:One calendar month.
Data monitored		:Reports from selected radiosonde TEMPs.
Area monitored		:0°N - 90°N, 100°W - 40°E
Standard of comparison		:Background field from UKMO global model.
Position		:Average latitude and longitude for period.
Observation times		:00, 12 UTC.
Level monitored		:500 hPa.
Element monitored		:GEOPOTENTIAL HEIGHT in metres
Parameters monitored	:NUM OBS	:Number of observations available at level shown during period.
	:NUM GROSS	:Number of gross errors at level shown during period.
	:SD	:SD of difference of observations from background values at level shown excluding those with gross errors.
	:BIAS	:Mean difference of observations from background values at level shown excluding those with gross errors.

GROSS ERROR LIMITS :Defined in Appendix I.1

WMO IDENT	OBS TIME	ELM	LEV	NUM OBS	NUM GROSS	SD	RMS	BIAS
ELML7	00	Z	500	16	0	9.2	10.4	4.8
ELML7	12	Z	500	19	0	13.5	13.7	2.6
FNOR	00	Z	500	12	0	8.7	8.9	1.5
FNOR	12	Z	500	12	1	8.6	9.8	4.8
FNOU	00	Z	500	11	0	10.5	11.5	4.8
FNOU	12	Z	500	12	0	9.8	10.6	4.1
FNPH	00	Z	500	13	0	8.1	8.9	-3.6
FNPH	12	Z	500	13	0	11.2	11.3	-1.5
FNRS	00	Z	500	11	0	8.5	8.5	0.7
FNRS	12	Z	500	11	0	9.9	9.9	1.2
LDWR	00	Z	500	29	0	7.8	8.1	2.3
LDWR	12	Z	500	28	0	9.5	10.4	-4.3
OVYA2	00	Z	500	12	0	11.5	12.9	5.8
OVYA2	12	Z	500	16	0	26.2	26.3	2.1
OXYH2	00	Z	500	16	0	13.2	13.5	-2.9
OXYH2	12	Z	500	15	0	10.3	10.3	-0.1
SHIPCK	00	Z	500	1	0	0.0	15.0	15.0
ZCBP6	00	Z	500	4	0	3.0	7.9	7.3
ZCBP6	12	Z	500	5	0	4.8	5.4	2.6
03953	00	Z	500	29	0	8.9	12.3	8.5
03953	12	Z	500	29	0	8.1	11.0	7.4
04018	00	Z	500	29	0	10.5	11.4	4.5
04018	12	Z	500	29	0	11.9	13.6	6.6
04220	00	Z	500	28	0	9.1	9.2	0.8
04220	12	Z	500	29	0	10.2	10.3	1.0
04270	00	Z	500	28	0	9.2	9.3	-0.9
04270	12	Z	500	28	0	10.8	10.8	-0.4
04339	00	Z	500	28	0	10.7	14.2	9.3
04339	12	Z	500	28	0	10.1	10.9	4.1
04360	00	Z	500	27	0	7.8	7.8	-0.9
04360	12	Z	500	29	0	9.9	10.2	-2.3
08001	00	Z	500	29	0	16.1	17.4	-6.7
08001	12	Z	500	26	0	15.8	17.6	-7.9
08508	00	Z	500	10	0	6.8	7.5	3.2
08508	12	Z	500	28	0	8.7	11.2	7.0
08522	12	Z	500	28	0	7.0	9.9	7.0
08594	12	Z	500	1	0	0.0	3.0	-3.0
60020	00	Z	500	26	0	7.3	10.1	7.0
60020	12	Z	500	27	0	7.7	15.2	13.1
71600	00	Z	500	28	0	13.2	13.9	4.5
71600	12	Z	500	28	0	9.0	11.5	7.2
72201	00	Z	500	27	0	8.2	8.6	-2.6
72201	12	Z	500	25	0	7.1	10.1	-7.2
72402	00	Z	500	29	0	7.9	10.8	7.4
72402	12	Z	500	29	0	19.2	20.3	6.5
74494	00	Z	500	27	0	7.7	7.7	0.7
74494	12	Z	500	26	0	9.2	10.1	-4.2
78016	00	Z	500	28	0	19.7	27.8	19.7
78016	12	Z	500	28	0	17.9	29.1	22.9

TABLE 12

MONTHLY MONITORING OF RADIOSONDE OBSERVATIONS (COSNA)
MONITORING CENTRE: BRACKNELL
MONTH: September 2000

Monitoring procedures

Period :One calendar month.

Data monitored :Reports from selected radiosonde TEMPs.

Area monitored :0°N - 90°N, 100°W - 40°E

Standard of comparison :Background field from UKMO global model.

Position :Average latitude and longitude for period.

Observation times :00, 12 UTC.

Level monitored :100 hPa.

Element monitored :VECTOR WIND in m s^{-1}

Parameters monitored :NUM OBS :Number of observations available at level shown during period.

:NUM GROSS :Number of gross errors at level shown during period.

:UBIAS,VBIAS :Mean difference of observations of U and V components from background values at level shown excluding those with gross errors.

:RMS :Root Mean Square difference of observations from background values at level shown excluding those with gross errors.

GROSS ERROR LIMITS :Defined in Appendix I.2

WMO IDENT	OBS TIME	ELM	LEV	NUM OBS	NUM GROSS	% REJ	RMS	UBIAS	VBIAS
ELML7	00	V	100	12	0	0	6.7	0.9	-0.5
ELML7	12	V	100	16	0	0	4.9	0.3	0.5
FNOR	00	V	100	11	0	0	3.4	1.0	0.1
FNOR	12	V	100	11	0	0	4.5	1.9	-1.6
FNOU	00	V	100	12	0	0	4.4	-1.2	1.3
FNOU	12	V	100	11	0	0	4.1	0.2	0.3
FNPH	00	V	100	9	0	0	3.2	0.2	0.5
FNPH	12	V	100	8	0	0	3.6	1.3	-1.0
FNRS	00	V	100	8	0	0	3.1	1.1	0.3
FNRS	12	V	100	9	0	0	3.9	1.0	1.2
LDWR	00	V	100	30	0	0	2.1	-0.7	0.4
LDWR	12	V	100	27	0	0	2.3	-0.4	-0.2
OVYA2	00	V	100	8	0	0	3.4	-0.1	-0.6
OVYA2	12	V	100	13	0	0	2.8	0.3	0.5
OXYH2	00	V	100	11	0	0	3.0	-1.0	-0.6
OXYH2	12	V	100	12	0	0	3.2	-0.9	-0.7
ZCBP6	00	V	100	3	0	0	3.1	-1.1	-0.6
ZCBP6	12	V	100	2	0	0	2.4	-0.8	1.9
03953	00	V	100	30	0	0	3.5	-0.3	1.1
03953	12	V	100	29	0	0	3.2	-0.9	0.3
04018	00	V	100	28	0	0	3.5	0.2	-0.2
04018	12	V	100	27	0	0	3.2	-0.2	0.0
04220	00	V	100	28	0	0	3.8	-0.2	1.6
04220	12	V	100	29	0	0	3.7	-0.1	1.0
04270	00	V	100	26	0	0	4.5	0.3	1.0
04270	12	V	100	26	0	0	4.7	0.1	0.8
04339	00	V	100	27	0	3	6.1	1.8	-0.9
04339	12	V	100	27	0	0	4.7	0.1	0.0
04360	00	V	100	28	0	0	3.9	-0.7	-0.3
04360	12	V	100	28	0	0	2.9	-0.6	-0.2
08001	00	V	100	30	0	0	4.0	0.6	0.8
08001	12	V	100	19	0	0	3.4	0.3	-0.2
08508	00	V	100	5	0	0	3.2	1.4	1.2
08508	12	V	100	11	0	0	3.5	-0.5	-0.8
08522	12	V	100	28	0	0	4.2	1.1	-0.1
08594	12	V	100	1	0	100	3.9	-3.5	-1.7
60020	12	V	100	1	0	0	7.2	0.1	-7.2
71600	00	V	100	29	0	0	4.4	0.5	-0.3
71600	12	V	100	28	0	0	3.9	0.3	1.3
72201	00	V	100	26	0	0	4.2	1.1	1.2
72201	12	V	100	25	0	0	3.3	-0.4	0.2
72402	00	V	100	28	0	0	4.2	0.0	0.6
72402	12	V	100	27	0	0	3.5	-0.3	0.0
74494	00	V	100	26	0	0	2.8	-0.6	0.3
74494	12	V	100	22	0	0	2.6	-0.3	0.5
78016	00	V	100	27	0	0	4.4	0.0	1.7
78016	12	V	100	26	0	0	4.9	-0.1	1.2

TABLE 13

MONTHLY MONITORING OF RADIOSONDE OBSERVATIONS (COSNA)
MONITORING CENTRE: BRACKNELL
MONTH: September 2000

Monitoring procedures

Period :One calendar month.

Data monitored :Reports from selected radiosonde TEMPs.

Area monitored :0°N - 90°N, 100°W - 40°E

Standard of comparison :Background field from UKMO global model.

Position :Average latitude and longitude for period.

Observation times :00, 12 UTC.

Level monitored :500 hPa.

Element monitored :VECTOR WIND in m s^{-1}

Parameters monitored :NUM OBS :Number of observations available at level shown during period.

:NUM GROSS :Number of gross errors at level shown during period.

:UBIAS,VBIAS: Mean difference of observations of U and V components from background values at level shown excluding those with gross errors.

:RMS :Root Mean Square difference of observations from background values at level shown excluding those with gross errors.

GROSS ERROR LIMITS :Defined in Appendix I.2

```
 WMO   OBS                 NUM   NUM     %
IDENT TIME  ELM   LEV   OBS  GROSS   REJ    RMS   UBIAS  VBIAS

ELML7  00    V    500    17     0     0     2.8    0.7    0.4
ELML7  12    V    500    19     0     0     5.5    0.7    2.4
FNOR   00    V    500    13     0     0     4.3   -1.0    1.1
FNOR   12    V    500    13     0     0     2.9    0.1   -1.0
FNOU   00    V    500    13     0     0     3.1   -0.6    1.3

FNOU   12    V    500    10     0     0     4.2   -0.9    1.0
FNPH   00    V    500    13     0     0     4.8   -1.2    0.3
FNPH   12    V    500    10     0     0     3.6    1.4   -0.3
FNRS   00    V    500     8     0     0     2.8    0.3    0.2
FNRS   12    V    500    10     0     0     3.4   -0.3    0.4

LDWR   00    V    500    30     0     0     4.4    0.0    0.8
LDWR   12    V    500    28     0     0     3.5    0.0    0.1
OVYA2  00    V    500    11     0     0     3.3   -0.5    1.1
OVYA2  12    V    500    14     0     0     4.5    1.3   -0.9
OXYH2  00    V    500    15     0     0     4.3   -0.1    0.8

OXYH2  12    V    500    15     0     6     7.5   -1.6    0.9
SHIPCK 00    V    500     2     0     0     4.9    0.4    4.0
ZCBP6  00    V    500     3     0     0     2.9   -2.5   -0.3
ZCBP6  12    V    500     2     0     0     4.8    4.0   -0.4
03953  00    V    500    29     0     0     4.0   -0.2   -0.9

03953  12    V    500    29     0     0     4.0    0.3    0.6
04018  00    V    500    30     0     0     4.1   -0.1    0.5
04018  12    V    500    29     0     0     4.3    1.8    0.8
04220  00    V    500    29     0     0     5.1    0.5   -1.4
04220  12    V    500    28     0     0     5.1    0.2   -0.9

04270  00    V    500    28     0     0     4.2   -1.0    0.6
04270  12    V    500    28     0     0     4.3   -0.4   -0.1
04339  00    V    500    28     0     0     5.7   -1.3   -0.2
04339  12    V    500    27     0     0     4.2   -0.2    0.3
04360  00    V    500    28     0     0     4.8   -0.3   -0.9

04360  12    V    500    29     0     0     3.9    0.3    1.1
08001  00    V    500    30     0     0     3.6    0.8   -0.2
08001  12    V    500    23     0     0     4.1   -0.2   -0.3
08508  00    V    500     5     0     0     3.2   -1.4   -0.6
08508  12    V    500    12     0     0     4.1    0.4    0.8

08522  12    V    500    28     0     0     3.4    0.9    0.0
08594  12    V    500     1     0   100     3.9   -1.6   -3.6
60020  00    V    500    26     0     0     3.9    1.2    0.8
60020  12    V    500    25     0     0     4.4   -0.3   -0.9
71600  00    V    500    29     0     0     3.9    0.3   -1.0

71600  12    V    500    28     0     0     4.2    0.0    0.8
72201  00    V    500    27     0     0     6.2    1.5   -0.1
72201  12    V    500    24     0     0     2.7    0.2    0.0
72402  00    V    500    29     0     0     3.6    0.9   -0.3
72402  12    V    500    29     0     0     3.1    1.2    0.3

74494  00    V    500    28     0     0     3.3   -0.2   -0.6
74494  12    V    500    25     0     0     3.8   -0.8    1.0
78016  00    V    500    28     0     0     4.0   -0.7   -0.4
78016  12    V    500    27     0     0     3.6   -0.8    0.5
```

APPENDIX I

1. The gross error limits for observation minus background differences of geopotential height in Tables 5, 10 and 11 are:-

Level (hPa)	Geopotential height (metres)
1000	100
850	100
700	100
500	150
400	175
300	200
250	225
200	250
150	275
100	300
70	375
50	400
30	450

The weighted RMS values used in Table 5,10 and 11 are calculated using the following weights:-

Level (hPa)	Weight
1000	3.70
850	3.40
700	2.90
500	2.20
400	1.90
300	1.60
250	1.50
200	1.37
150	1.19
100	1.00
70	0.87
50	0.80
30	0.64

2. The gross error limits for observation minus background differences of windspeed in Tables 6,12 and 13 are:-

Level (hPa)	Windspeed m s^{-1}
1000	35
850	35
700	40
500	45
400	50
300	60
250	60
200	50
150	50
100	45